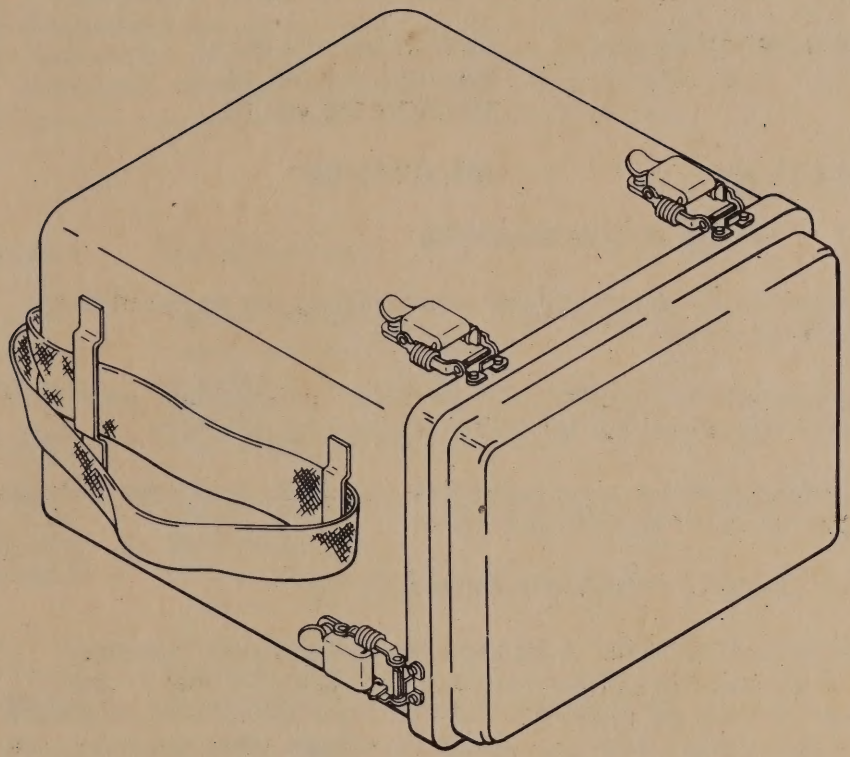
TM 11-5805-246-20

TECHNICAL MANUAL

ORGANIZATIONAL MAINTENANCE

MANUAL



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TELEGRAPH TERMINAL

TH-5/TG (NSN 5805-00-315-2858)
TH-5A/TG (NSN 5805-00-246-8734)

HEADQUARTERS, DEPARTMENT OF THE ARMY

DECEMBER 1982

WARNING

HIGH VOLTAGE

is used in the operation of this equipment.

DEATH ON CONTACT

may result if personnel fail to observe safety precautions.

Dangerous voltages exist in the following components of telegraph terminal TH-5/TG and TH-5A/TG:

INPUT CIRCUIT:	TH-5/TG 115 VOLTS, TH-5A/TG 115 VOLTS,
POWER TRANSFORMER T6:	TH-5T/G 560 VOLTS, TH-5A/TG 560 VOLTS, TH-5A/TG 560 VOLTS,
OUTPUT VOLTAGE:	285 VOLTS DC

DO NOT TAKE CHANCES

Remove power cord from power source or remove fuse before making any connections or replacing any parts inside the equipment.

To prevent damage to telegraph terminal TH-5/TG or TH-5A/TG be sure telegraph terminal is correctly secured to electrical equipment rack MT-1278/U or mounting MT-791/U.

When power to equipment is disconnected, some capacitors may retain dangerous voltages. Always discharge capacitors before working on equipment.

Tube shields are hot. Do not attempt to remove with fingers until cool.

Adequate ventilation should be provided while using trichlorotrifluoroethane. Prolonged breathing of vapor should be avoided. The solvent should not be used near heat or open flame; the products of decomposition are toxic and irritating. Since trichlorotrifluoroethane dissolves natural oils, prolonged contact with skin should be avoided. When necessary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.

TECHNICAL MANUAL
No. 11-5805-246-20

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC *30 December 1982*

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TELEGRAPH TERMINAL

TH-5/TG (NSN 5805-00-315-2858)
TH-5A/TG (NSN 5805-00-246-8734)

REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures please let us know. Mail you letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2802-2 located in the back of this manual direct to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: DRSEL-ME-MP, Fort Monmouth, New Jersey 07703. A reply will be furnished to you.

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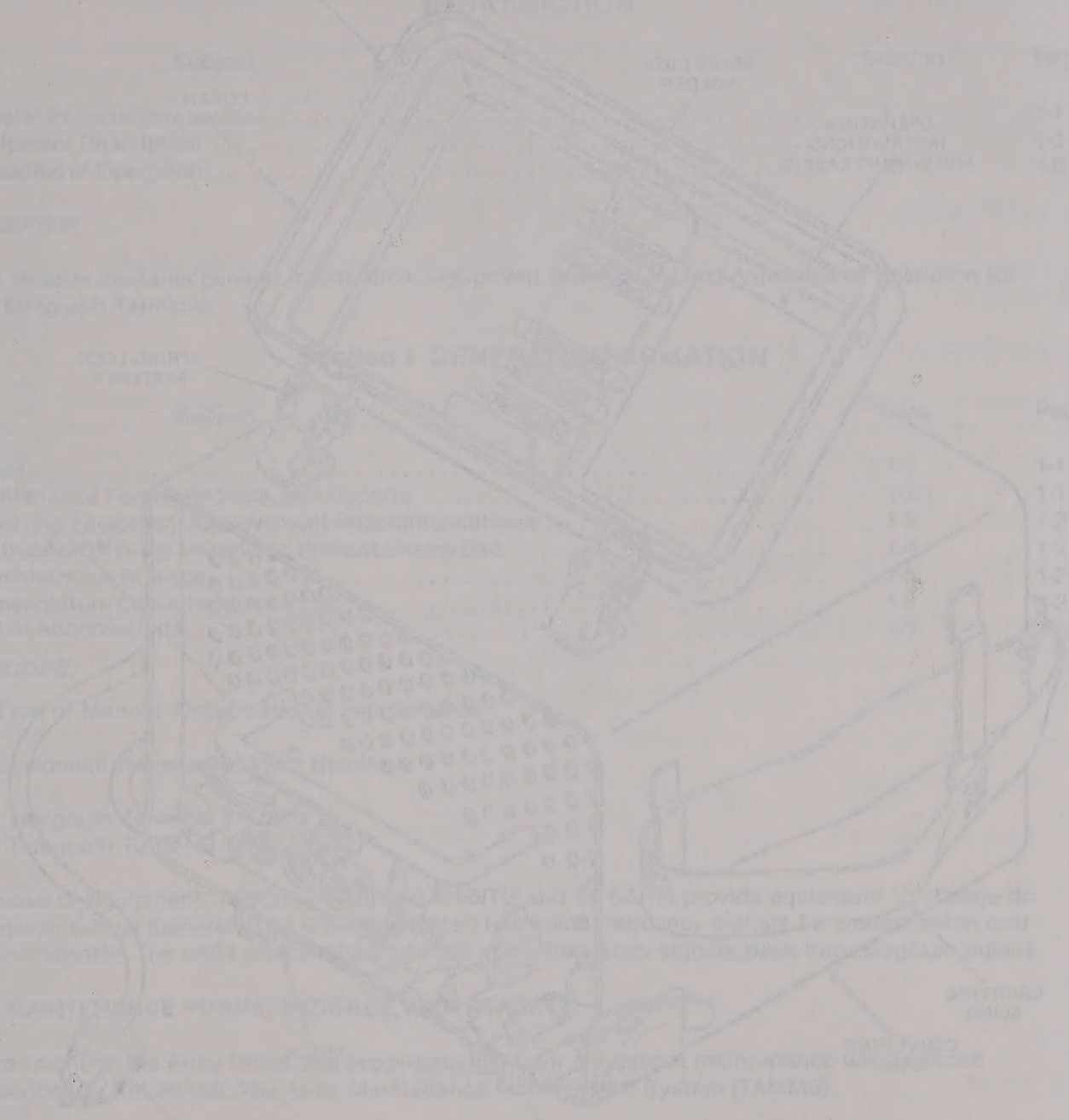
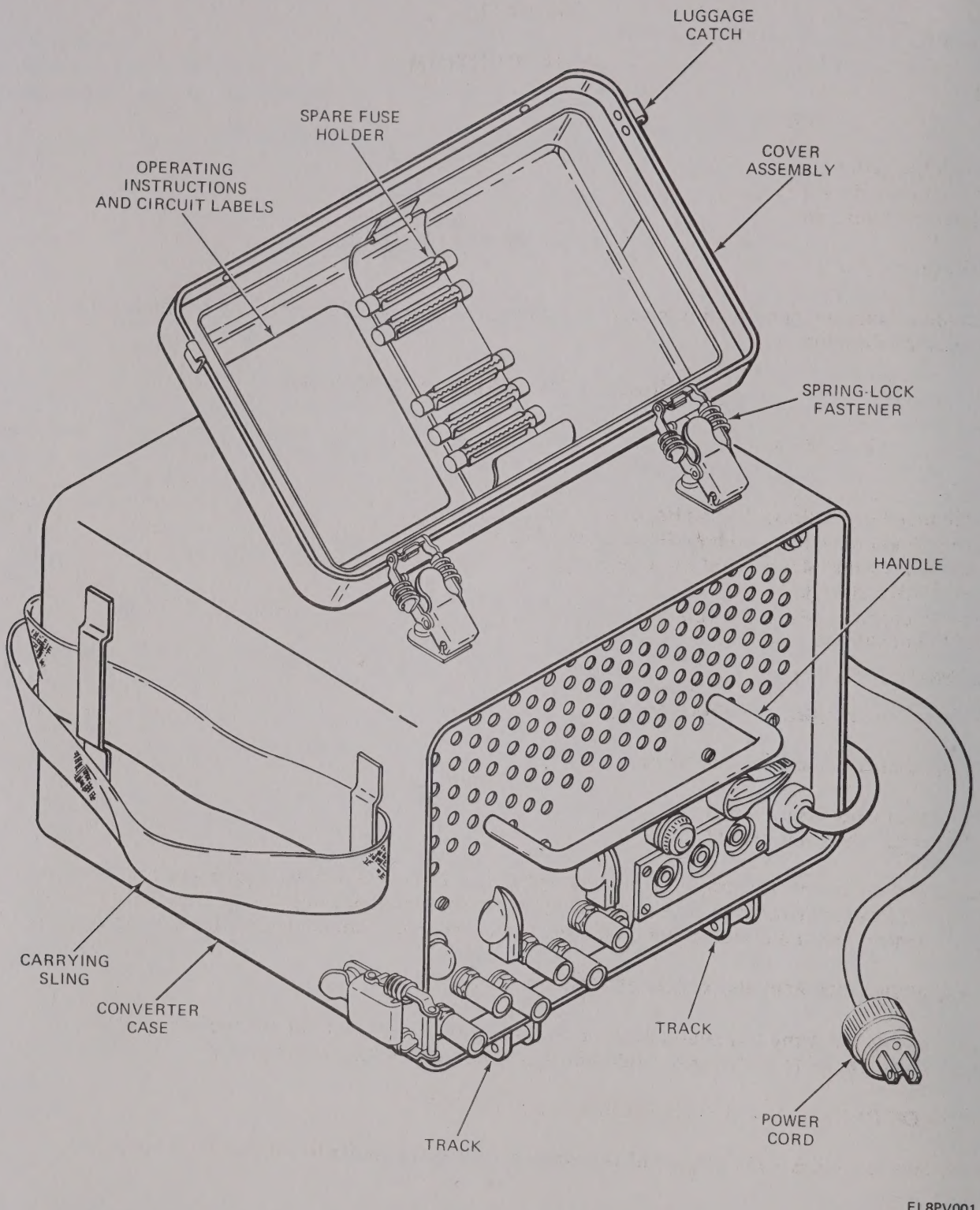
HOW TO USE THIS MANUAL

In this manual paragraphs are numbered by chapter and the order in which they appear in each chapter. To find the paragraph you need, first locate your subject in the table of contents. Turn to the page shown and read the paragraph headings until you see what you're looking for. Special tools and parts are shown in the rear of this manual as appendixes. If you find a word or term you don't understand, refer to the glossary.

*THIS MANUAL SUPERSEDES TM 11-5805-246-20, 20 JUNE 1960.





TELEGRAPH TERMINAL TH-5/TG AND TH-5A/TG

CHAPTER 1

INTRODUCTION

Subject	Section	Page
General Information	I	1-1
Equipment Description	II	1-3
Principles of Operation	III	1-9

OVERVIEW

This chapter contains general information, equipment description, and principles of operation for the Telegraph Terminal.

Section I GENERAL INFORMATION

Subject	Para	Page
Scope	1-1	1-1
Maintenance Forms, Records, and Reports	1-2	1-1
Reporting Equipment Improvement Recommendations	1-3	1-2
Destruction of Army Materiel to Prevent Enemy Use	1-4	1-2
Administrative Storage	1-5	1-2
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1-1. SCOPE.

Type of Manual: Organizational Maintenance

Equipment Name and Model Number:

Telegraph Terminal TH-5/TG
Telegraph Terminal TH-5A/TG

Purpose of Equipment: Telegraph Terminal TH-5/TG and TH-5A/TG provide equipment to change dc telegraph pulses (generated by a teletypewriter) into voice frequency signals for transmission over voice channels. The units also change received voice frequency signals back into telegraph pulses.

1-2. MAINTENANCE FORMS, RECORDS, AND REPORTS.

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by TM 38-750, The Army Maintenance Management System (TAMMS).

REPORT OF PACKAGING AND HANDLING DEFICIENCIES

Fill out and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2/DLAR 4140.55.

DISCREPANCY IN SHIPMENT REPORT (DISREP) (SF 361)

Fill out and forward Discrepancy in Shipment report (DISREP) (SF 361) as prescribed in AR-735-11-2/DLAR 4140.55.

1-3. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR).

If your TH-5/TG or TH-5A/TG needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Put it on an SF 368 (Quality Deficiency Report). Mail it to us at: Commander U.S. Army Communications-Electronics Command, ATTN: DRSEL-ME-MP, Fort Monmouth, New Jersey 07703. We'll send you a reply.

1-4. DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE.

Destruction of Army Electronics Materiel to prevent enemy use shall be in accordance with TM 750-244-2.

1-5. ADMINISTRATIVE STORAGE.

Administrative storage of equipment issued to and used by Army activities will have preventive maintenance performed in accordance with the PMCS charts before storing. When removing the equipment from administrative storage, the PMCS should be performed to assure operational readiness. Disassembly and repacking of equipment for shipment or limited storage are covered in paragraphs 2-39.

1-6. NOMENCLATURE CROSS-REFERENCE LIST.

This list contains the common names used throughout this manual in place of official nomenclature.

Common Name	Official Nomenclature
telegraph terminal	Telegraph Terminal TH-5/TG and TH-5A/TG
remote control unit	Control Unit RM-39
line control unit	Telegraph Line Control C-2894/FG
telephone	Telephone TA-312/PT
vf ringer	Telegraph-Telephone Signal Converter, TA-182/U
mount	Mounting, MT-791/U
rack	Electrical Equipment Rack MT-1278/U

1-7. LIST OF ABBREVIATIONS.

Abbreviation	Name
ac	alternating current
am	amplitude modulation
bfo	beat frequency oscillator
cw	continuous wave
dbm	decibels referenced to one milliwatt
dc	direct current
dx	duplex
freq	frequency
fsk	frequency shift keying
Hz	Hertz
kHz	kilohertz
rt	receiver-transmitter
rtty	radio-teletypewriter
ma	milliampere
mHz	megahertz
nsk	narrow frequency shift keying
ow	orderwire
owr	one way reversible
pwr	power
rf	radio frequency
ssb	single side band
swr	standing wave ratio
tty	teletypewriter
vswr	voltage, standing wave ratio
wpm	words per minute
Km	kilometer
vac	volts alternating current
vf	voice frequency

Section II EQUIPMENT DESCRIPTION

Subject	Para	Page
Equipment Characteristics, Capabilities and Features	1-8	1-4
Location and Description of Major Components	1-9	1-4
Differences Between Models	1-10	1-5
Equipment Data	1-11	1-6
Safety, Care, and Handling	1-12	1-6
Equipment Configuration	1-13	1-7

1-8. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES.

CHARACTERISTICS

Changes dc telegraph pulses generated by a teletypewriter into voice frequency for transmission over voice channels.

Changes received voice frequency signals back into telegraph pulses.

CAPABILITIES AND FEATURES

All weather operational.

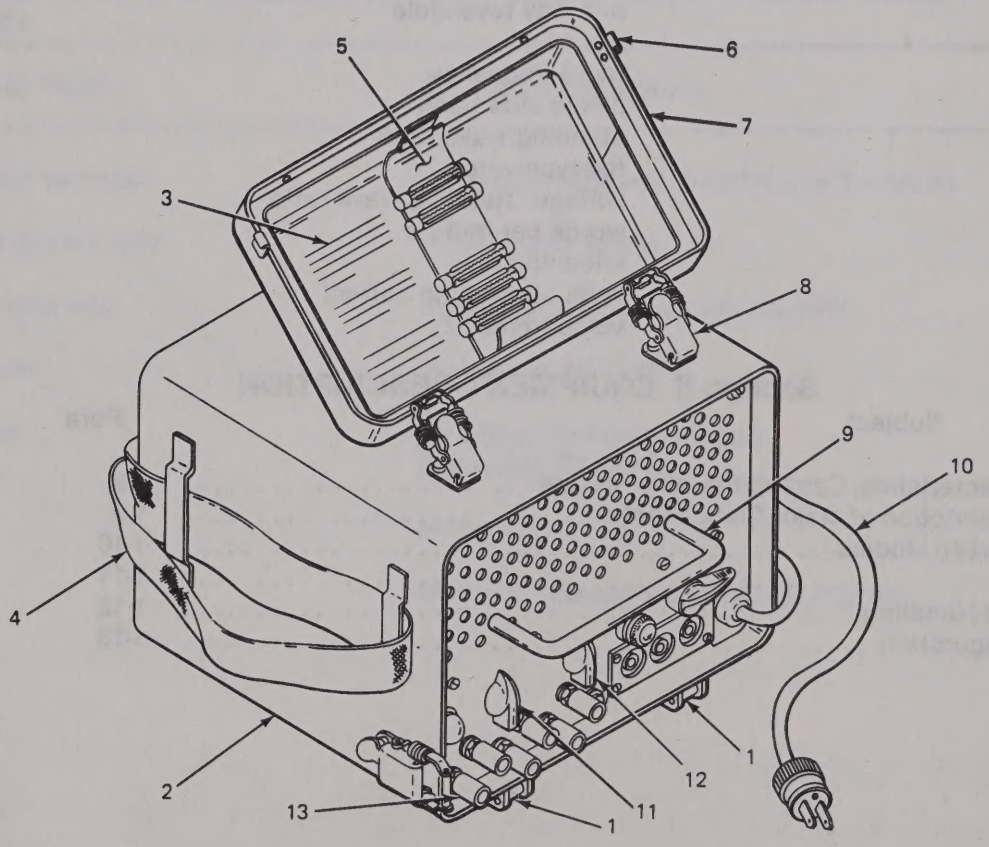
Highly portable.

Can be operated without mounting MT-791/U or MT-1278/U.

Can be operated with Remote Control Unit RM-39.

Can be operated with Telegraph Line Control Unit C-2894/FG.

1-9. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS.



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1-9. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS. (CONT)

1. Tracks: Allows equipment to be mounted using mounting MT-791/U
2. Converter Case: Protects internal components.
3. Circuit labels and operating instructions.
4. Carrying sling.
5. Spare Fuse Holder: Contains five spare fuses (1 1/2 amp).
6. Luggage Catch: Secures cover assembly when fastened.
7. Cover Assembly: With cover secured, unit is waterproof.
8. Spring Lock Fastener: Secures cover assembly to unit.
9. Handle: Allows for easy movement.
10. Power Cord: Supplies unit with power.
11. NORM-REC-SEND Switch: Arranges for wire or radio circuits.
12. 4W-2W-TEL-Switch: Arranges type of line circuit either telephone or teletypewriter.
13. Binding Posts: Provides connections for different type of operation.

1-10. DIFFERENCES BETWEEN MODELS.

Telegraph Terminal TH-5/TG can be used with Telegraph Terminal TH-5A/TG.

Item	TH-5/TG	TH-5A/TG
Line voltage	115 volts, single phase, 50 to 60 Hz	115 volts, single phase, 47 to 420 Hz
Power Transformer T6	50 to 60 Hz	CPN 672-0124-00 47 to 420 Hz
Rectifier shield	7 pin miniature, long	7 pin miniature, short
Receiving sensitivity	-50-35, or -25 dbm	-50 or -25 dbm

NOTE

Vacuum tubes V3, V4, V6, V13, V14, and V15 may be replaced with semiconductors 5961-00-076-3545 and 5961-00-076-3546. Vacuum tube V13 may be replaced with semiconductor 5961-00-845-2331. Locator diagrams will reference semiconductors which may or may not be present. If a semiconductor is present, use a multimeter for tests.

1-11. EQUIPMENT DATA.

WEIGHTS AND DIMENSIONS

Weight	18 1/2 pounds
Length	11 inches
Width	10 1/2 inches
Height	7 1/2 inches

PERFORMANCE

Transmission speed	60,75,100 words per minute
Voltage requirements	115 vac ±10 percent
Type of modulation	Frequency shift
Bandwidth	200 Hz
Transmission frequency	Mark 1325 Hz ±2 Hz Space 1225 Hz ±2 Hz Ringbreak 20 Hz
Minimum input level	vf signal 50 dbm Ringing signal 90 vac, 20 Hz
Jack current	
Send	14.85 to 18.15 ma
Receive	19 to 32 ma

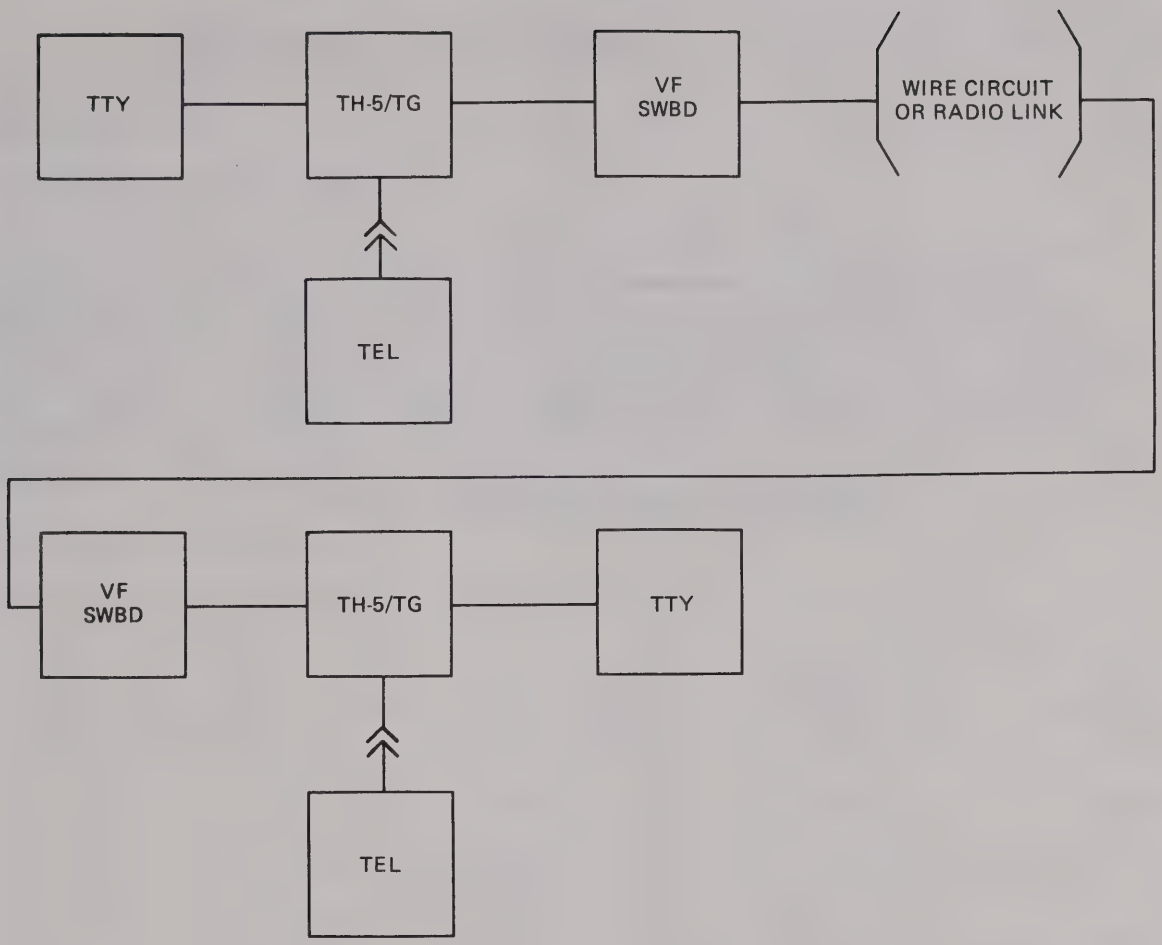
SIGNAL TIME DELAY

Distortion	
Receiving	5 percent maximum
Transmitting	5 percent maximum
Impedance (at 1000 Hz)	
Input	600 ohms
Output	600 ohms

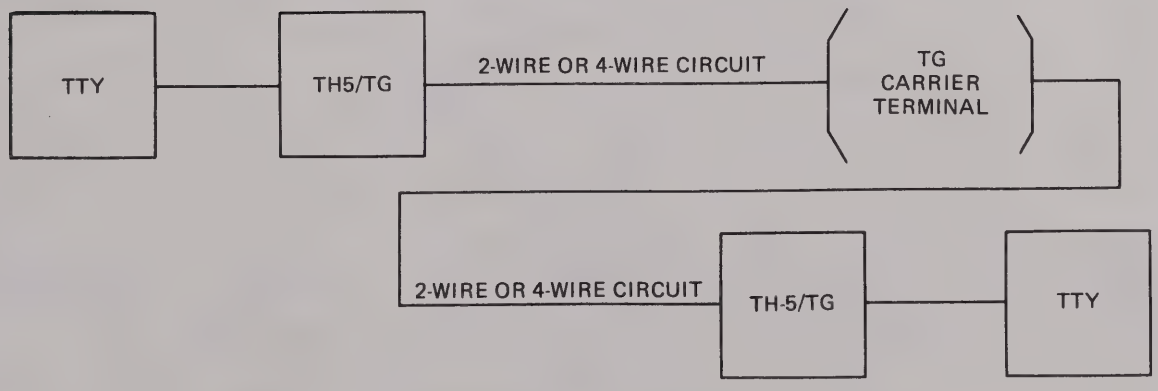
1-12. SAFETY, CARE, AND HANDLING.

Observe all WARNINGS, CAUTIONS and NOTES in this manual. This equipment can be dangerous if these instructions are not followed.

1-13. EQUIPMENT CONFIGURATION.



A. ALTERNATE TELEPHONE-TELEGRAPH TRANSMISSION



B. CARRIER TELEGRAPH TRANSMISSION

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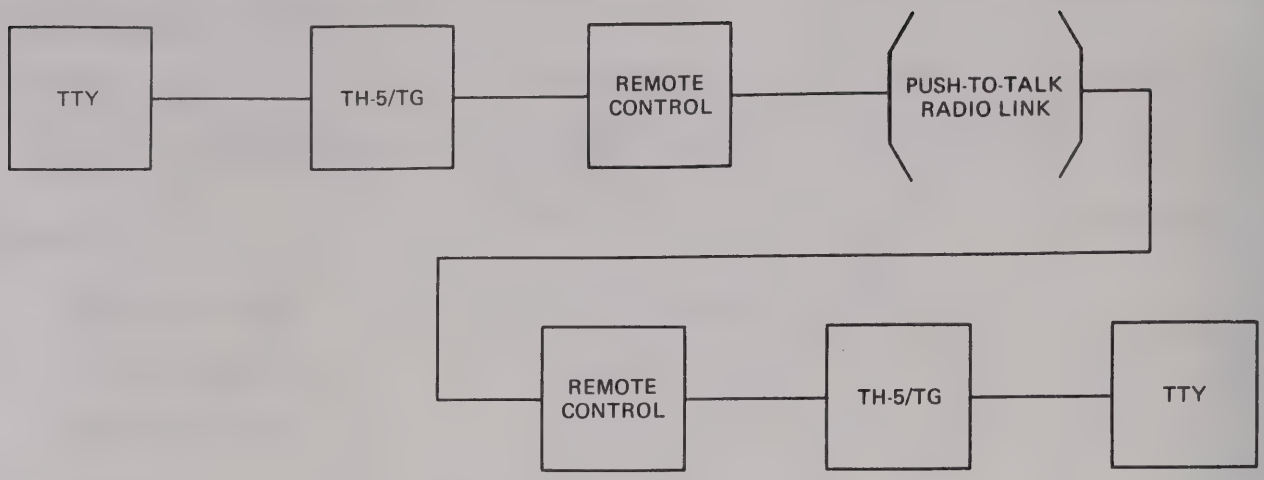
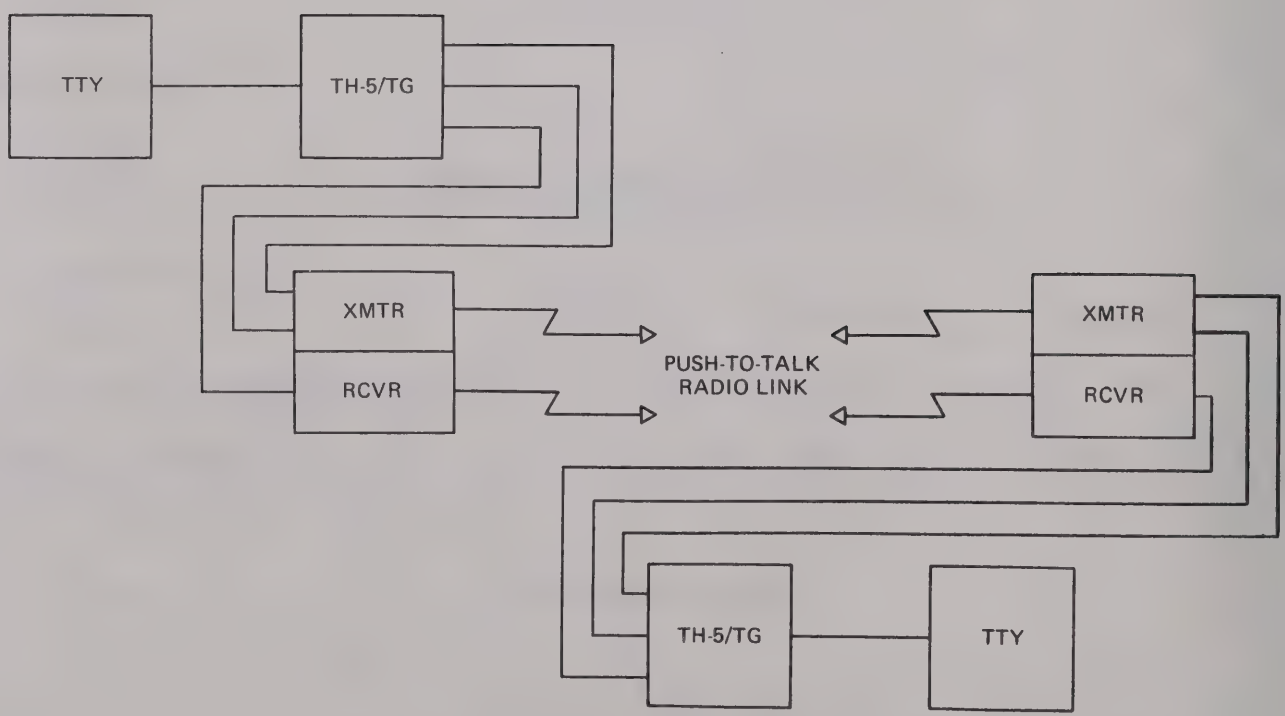
1-13. EQUIPMENT CONFIGURATION. (CONT)



C. PUSH-TO-TALK RADIO OPERATION OVER TWO-WIRE CIRCUIT, USING REMOTE CONTROL UNIT



D. PUSH-TO-TALK RADIO OPERATION OVER FOUR-WIRE CIRCUIT

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Section III PRINCIPLES OF OPERATION

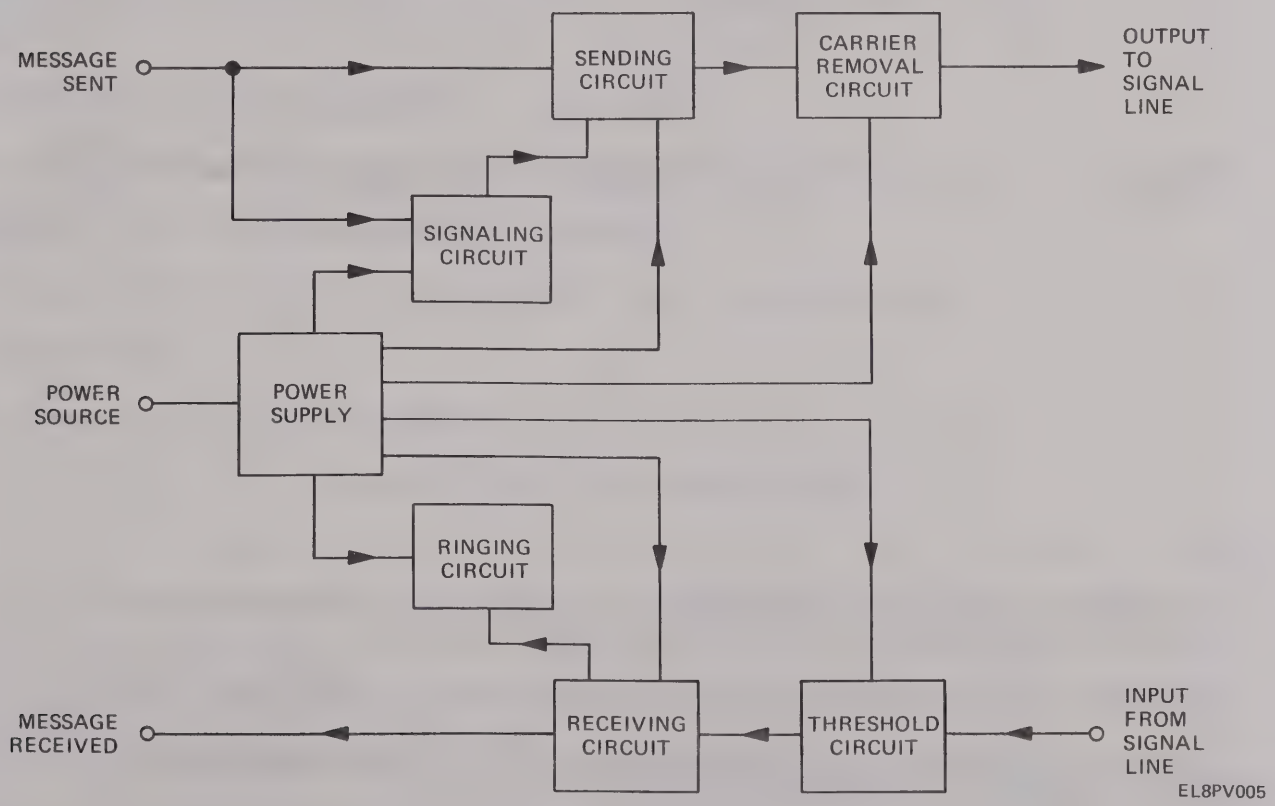
Subject	Para	Page
Operating Characteristics	1-14	1-9
Component Functions	1-15	1-9

1-14. OPERATING CHARACTERISTICS.

Telegraph Terminal TH-5/TG or TH-5A/TG is used between teletypewriter stations to provide teletypewriter transmission over lines which will not pass direct current (dc). For transmitting the neutral mark and space signals from the teletypewriter are 1,325 and 1,225 Hz respectively. The received voice frequency (vf) signals are changed back to the corresponding neutral dc signals. The telegraph terminal provides a means of 20 Hz signaling, If signaling is needed, a ringer such as Converter Telegraph-Telephone Signal TA-182/U must be used. the telegraph terminal also provides for connection of a local-battery field telephone. Telephones and telegraphs cannot be used at the same time.

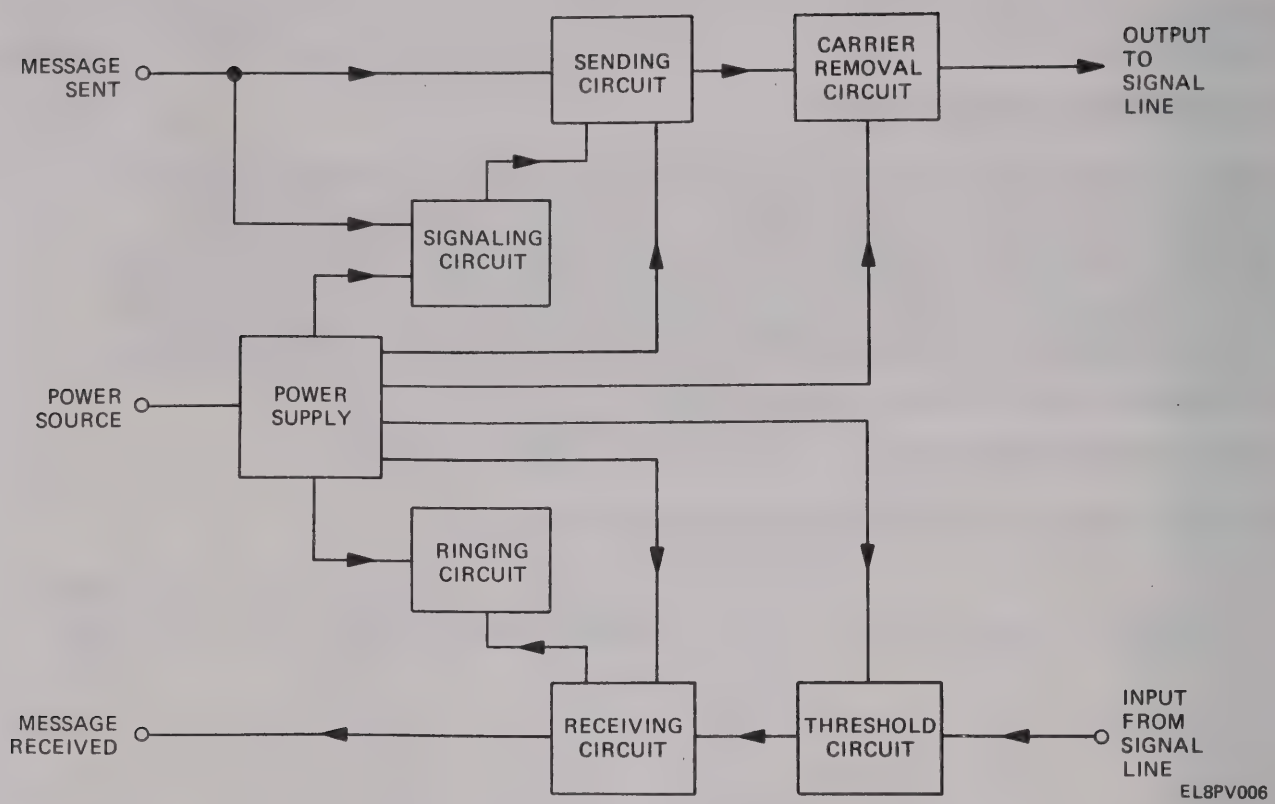
1-15. COMPONENT FUNCTIONS.

Component functions are divided into the following groups:



Sending circuit: Changes neutral dc teletypewriter signals to vf teletypewriter signals.

1-15. COMPONENT FUNCTIONS. (CONT)



Carrier removal circuit: Prevents the output of the sending circuit from being applied to the !ine when the teletypewriter sends a consent mark (idle) signal.

Receiving circuit: Changes vf teletypewriter signals to neutral dc teletypewriter signals.

Threshold circuit (level control): Disables the receiving circuit when vf teletypewriter signals below approximately 50 dbm are received from the line.

Signaling and ringing circuits: Transmit and receive 20 Hz signals.

Power supply: Provides operating power for the telegraph terminal.

CHAPTER 2

MAINTENANCE INSTRUCTIONS

Subject	Section	Page
Repair Parts, Special Tools, TMDE, and Support Equipment	I	2-1
Service Upon Receipt	II	2-1
Preventive Maintenance Checks and Services	III	2-20
Troubleshooting Procedures	IV	2-30
Maintenance Procedures	V	2-47
Preparation for Storage or Shipment	VI	2-96

OVERVIEW

This chapter contains service upon receipt, troubleshooting, and maintenance procedures for organizational maintenance level for the telegraph terminal.

Section I REPAIR PARTS, SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

Subject	Para	Page
Common Tools and Equipment	2-1	2-1
Special Tools, TMDE, and Support Equipment	2-2	2-1
Repair Parts	2-3	2-1

2-1. COMMON TOOLS AND EQUIPMENT.

For authorized common tools and equipment see appendix B, section III.

2-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT.

The telegraph terminal does not require any special tools or support equipment.

2-3. REPAIR PARTS.

Repair parts are listed in TM 11-5805-246-20P.

Section II SERVICE UPON RECEIPT

Subject	Para	Page
Unpacking	2-4	2-2
Checking Unpacked Equipment	2-5	2-4
Service Upon Receipt of Materiel	2-6	2-4
Site and Shelter Requirements	2-7	2-6
Installation Instructions for Auxiliary Equipment	2-8	2-6
Preliminary Servicing and Adjustment of Equipment	2-9	2-12
Removal of Chassis Assembly	2-10	2-12
Removal of Home-Copy Strap for Full Duplex Operation	2-11	2-14
Installation of Strap for Common Battery Switchboard Operation	2-12	2-16
Inspection of Terminal Boards	2-13	2-18

2-4. UNPACKING.

This task covers:

Unpacking

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment TK-100/G

Materials/Parts

None

Personnel Required

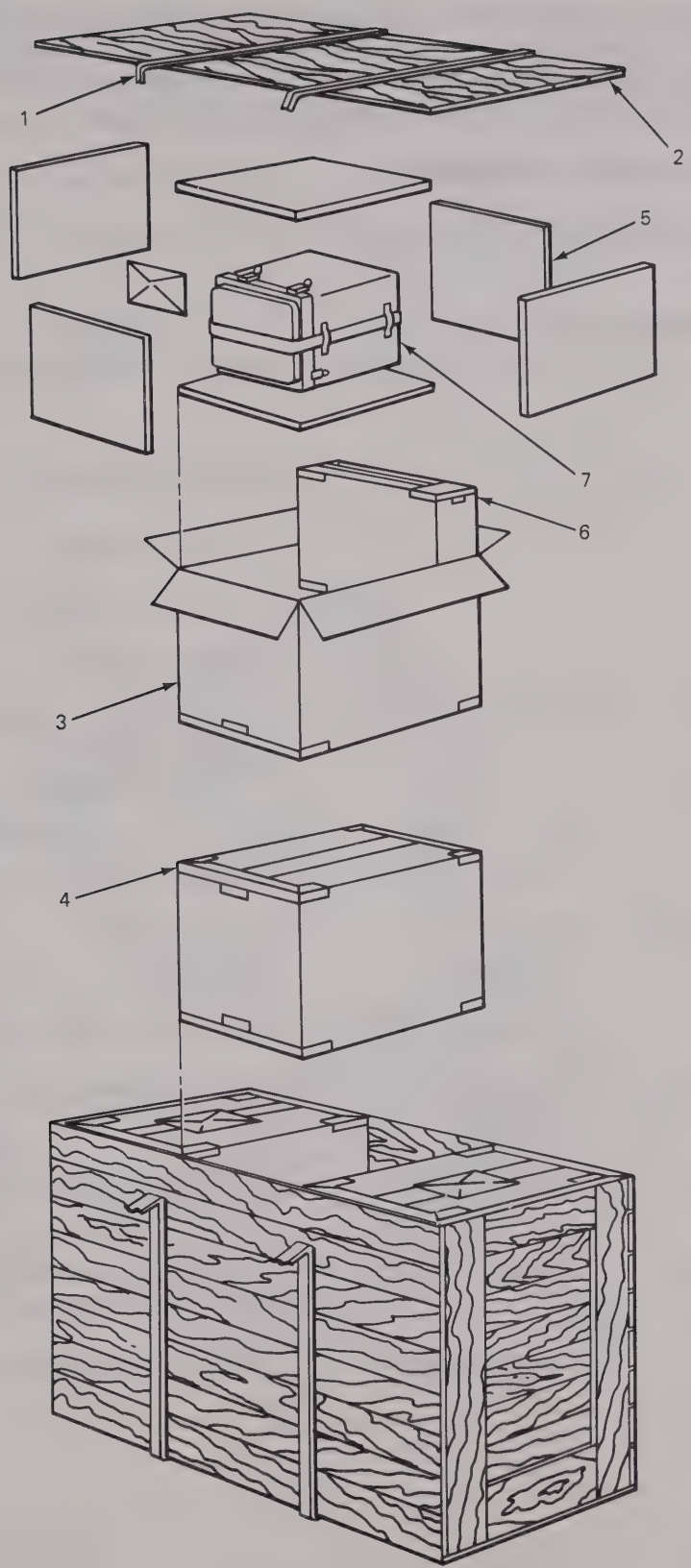
One technician

Equipment Condition

Not in operation

LOCATION	ITEM	ACTION REMARKS
		WARNING Wear heavy gloves and protective eyewear when cutting straps.
1. Top of wooden box	Steel straps (1)	Cut and fold back.
2.	Nails (2)	Using claw hammer, remove.
3. Below top of wooden box	Fiberboard container (3)	Lift each container out of box.
4. Top of fiberboard container	Pressure sensitive tape (4)	Using knife, cut.
5. Around unit	Fiberboard pad (5)	Remove.
6. Inside fiberboard container	Running spares container (6)	Remove.
7. Sides of package	Running spares container (6)	Remove contents.
8. Inside fiberboard container	Telegraph terminal (7)	Remove.

2-4. UNPACKING. (CONT)



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2-5. CHECKING UNPACKED EQUIPMENT.

Inspect the equipment for damage due to shipment. If the equipment has been damaged, report damage on Form SF 364 (Report of Discrepancy (ROD)). Check whether the equipment has been modified. Check the equipment against the packing slip to see if the shipment is complete. Report all discrepancies using SF 361 Discrepancy in Shipment Report.

2-6. SERVICE UPON RECEIPT OF MATERIEL.

This task covers:

Service upon receipt

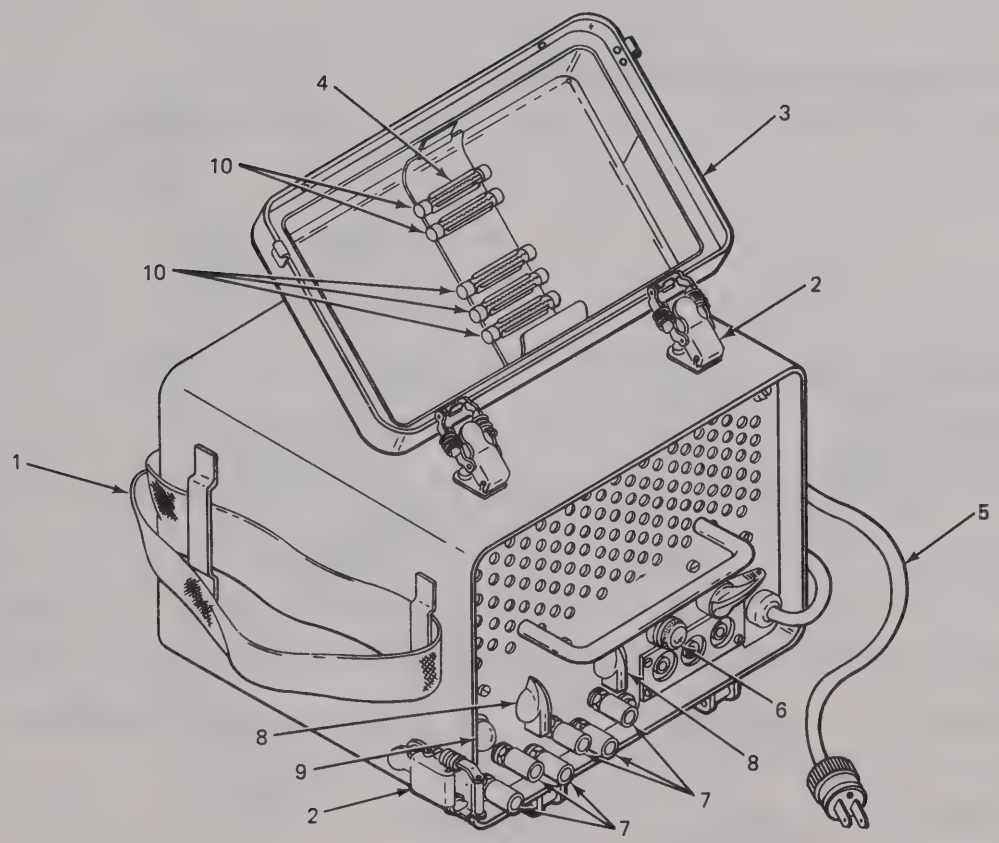
INITIAL SETUP

Tools	Personnel Required
None	One technician
Materials/Parts	**Equipment Condition**
None	Not in operation

	LOCATION	ITEM	ACTION **REMARKS**
1.	Sides of unit	Carry sling (1)	Loosen, check for rips.
2.	Between cover and unit	Spring fasteners (2)	Release.
3.	Top of unit	Cover assembly (3)	Open and check action.
4.	Inside of cover	Spare fuse-holder (4)	Check for damage or insecure mounting.
5.	Front of unit	Power cord (5)	Unwind and inspect for damage (cuts, or frays in insulation).
6.	Below fusecap front of unit	Fuse (6)	Remove. Check for damage, correct size (1-1/2 ampere) and proper installation.
7.	Front panel	Binding posts (7)	Push to check action.

2-6. SERVICE UPON RECEIPT OF MATERIEL. (CONT)

	LOCATION	ITEM	ACTION **REMARKS**
8.	Front panel	Switches (8)	Check action.
9.		Glowlamp (9)	Unscrew lens. Check glowlamp for damage and proper installation.
10.	Cover assembly (inside	Five spare fuses (10)	Check quantity and proper size (1-1/2 ampere).



2-7. SITE AND SHELTER REQUIREMENTS.

The telegraph terminal may be installed in vehicles, in racks MT-791/U or MT-1278/U, or on any level area. When mountings or racks are not provided, the telegraph terminal may be temporarily stacked on an equipment case or on the ground.

NOTE

Do not place telegraph terminal more than six feet away from the teletypewriter. A power source of 115 vac, 50 to 60 Hz must be available.

2-8. INSTALLATION INSTRUCTIONS FOR AUXILIARY EQUIPMENT.

REMOTE CONTROL UNIT. The telegraph terminal can be used with Remote Control Unit RM-39. See TM 11-2667 for connection information.

LINE CONTROL UNIT. The telegraph terminal can be used with a line control unit such as Telegraph Line Control Unit C-2894/FG. See TM 11-5805-204-15 for information.

This task covers:

Installation of telegraph terminal in Mounting MT-791/U

INITIAL SETUP

Tools	Personnel Required
None	One technician
Materials/Parts	**Equipment Condition**
Mounting MT-791/U	Not in operation

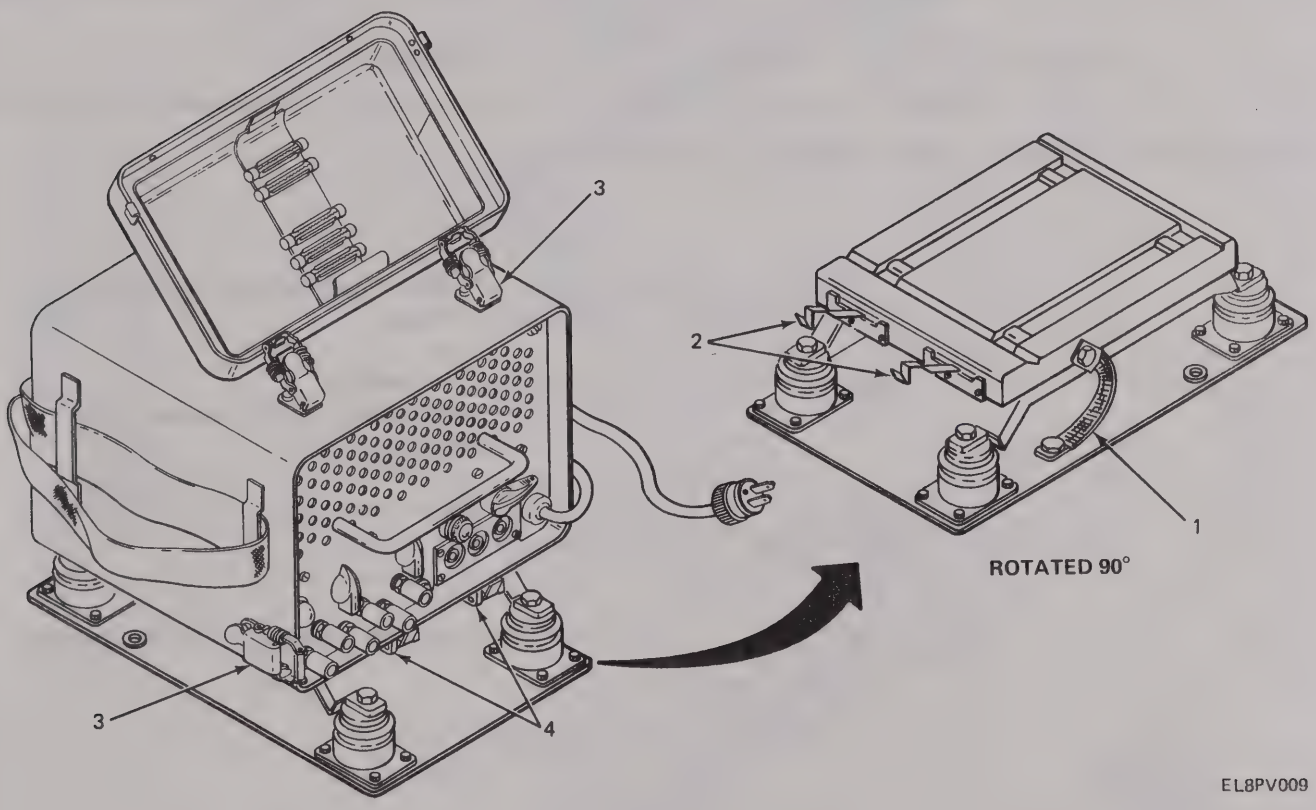
LOCATION	ITEM	ACTION **REMARKS**

INSTALLATION OF TELEGRAPH TERMINAL IN MOUNTING MT-791/U

1.	Base of mount	Grounding strap (1)	Check that grounding strap is secure.
2.	Front of mount	Locking handles (2)	Push in.

2-8. INSTALLATION INSTRUCTIONS FOR AUXILIARY EQUIPMENT. (CONT)

LOCATION	ITEM	ACTION **REMARKS**
INSTALLATION OF TELEGRAPH TERMINAL IN MOUNTING MT-791/U (CONT)		
3. Telegraph terminal cover	Luggage catch (3)	Unlatch and raise cover assembly.
4. Bottom of converter case	Tracks (4)	Set the tracks on converter case into grooves of mounting.
5. Front of mount	Locking handles (2)	Pull locking handles forward. Check that unit is securely locked in place.



2-8. INSTALLATION INSTRUCTIONS FOR AUXILIARY EQUIPMENT. (CONT)

This task covers:

Installation of telegraph terminal in Rack MT-1278/U

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment TK-100/G

Materials/Parts

Electrical Equipment Rack MT-1278/U

Personnel Required

One technician

Equipment Condition

Not in operation

LOCATION	ITEM	ACTION **REMARKS**

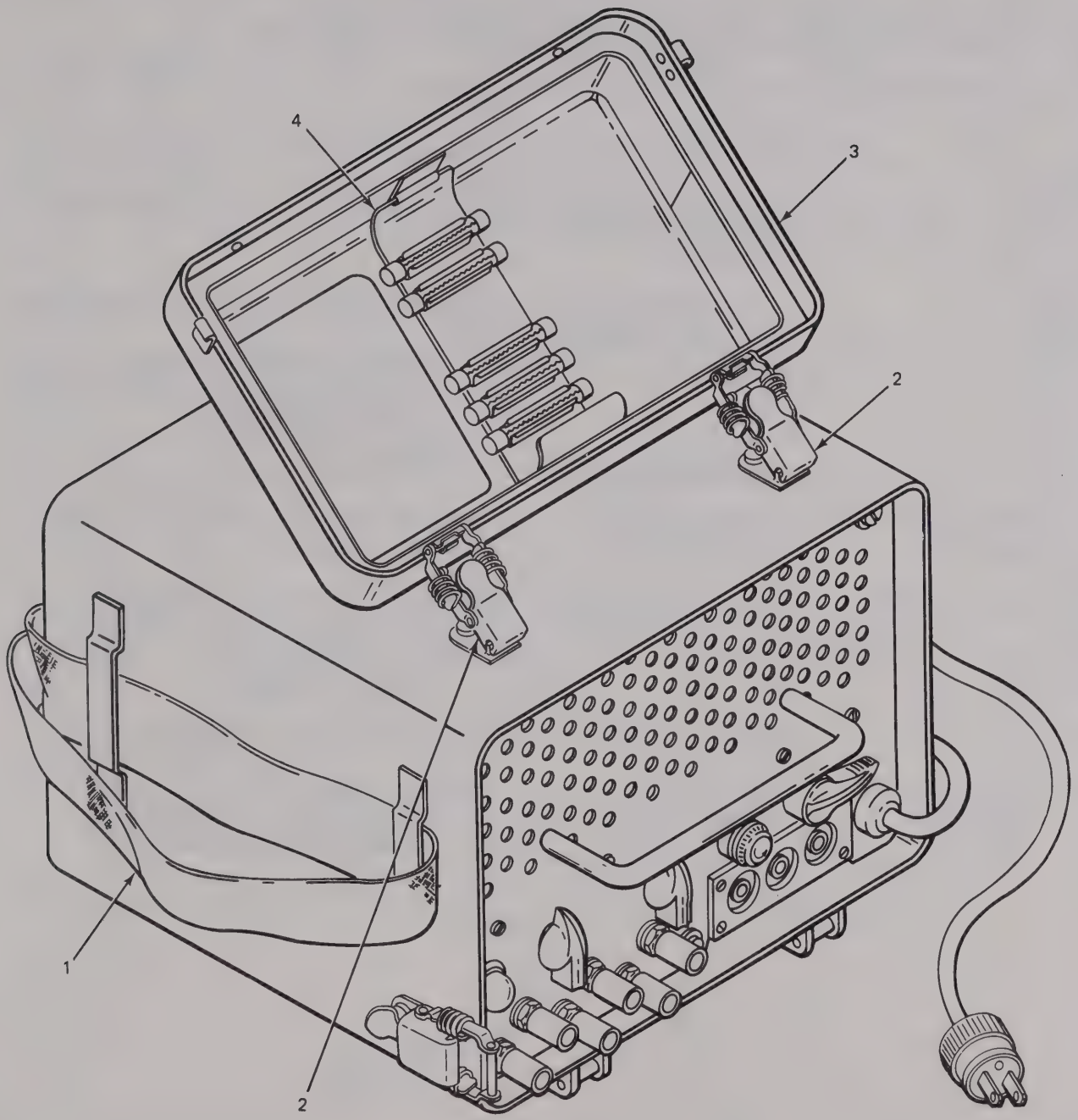
INSTALLATION OF TELEGRAPH TERMINAL IN RACK MT-1278/U

NOTE

Electrical Equipment Rack MT-1278/U can be used to mount a maximum of four telegraph terminals.

1.	Telegraph terminal	Carrying sling (1)	Unbuckle and remove. **Fold into four-inch folds and tie with string.**
2.		Spring fasteners (2) and cover (3)	Release. Open cover and remove from transit case.
3.		Spare fuse holder (4)	Remove fuses and store with running spares.

2-8. INSTALLATION INSTRUCTIONS FOR AUXILIARY EQUIPMENT. (CONT)



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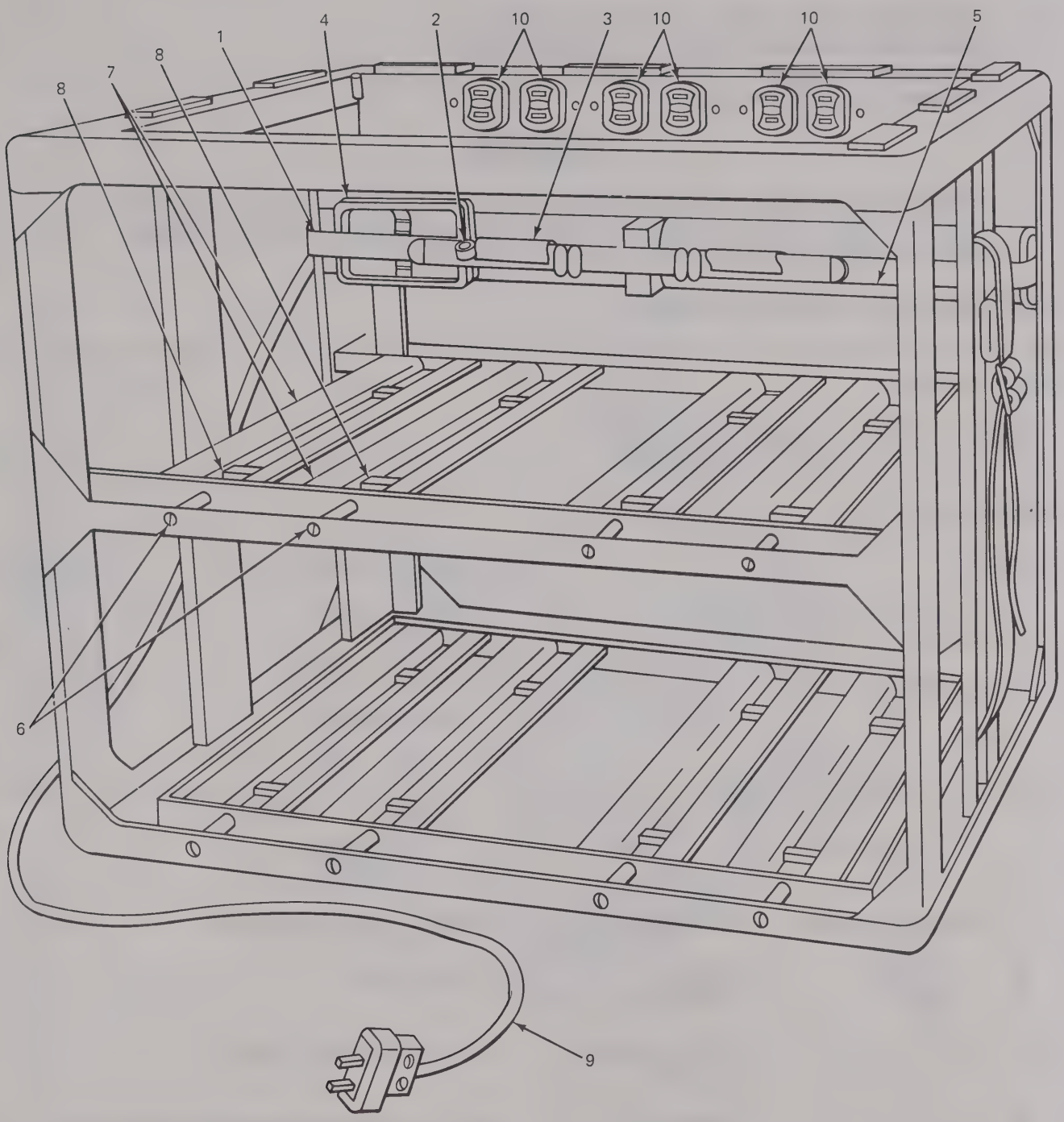
2-8. INSTALLATION INSTRUCTIONS FOR AUXILIARY EQUIPMENT. (CONT)

	LOCATION	ITEM	ACTION **REMARKS**
INSTALLATION OF TELEGRAPH TERMINAL IN RACK MT-1278/U. (CONT)			
4.	Rack MT-1278/U	Cover assembly retaining strap (1)	Unbuckle.
5.		Carrying sling (2) and carrying sling bracket (3)	Put folded sling into carrying sling bracket.
6.		Cover assembly (4) and cover assembly bracket (5)	Place in bracket with catches toward rear of rack. **Check that cover is between extended brackets to which each end of strap is secured.**
7.		Locking screws (6)	Using screwdriver, loosen.
8.	Telegraph terminal tracks	Track grooves (7) and clamps (8)	Place tracks in grooves. Push until tracks are secured by clamps.
9.	Rack MT-1278/U	Locking screws (6)	Tighten until locking screws are secure against the front of the tracks on the telegraph terminal TH-5/TG. **Do not over tighten.**
10.		Power cord (9)	Connect to 115 vac, 60 Hz, power source.
11.	Telegraph terminal power cord	Convenience outlets (10)	Connect to outlet in rack. **Slack cord is to be coiled and placed on top of transit case.**

2-8. INSTALLATION INSTRUCTIONS FOR AUXILIARY EQUIPMENT. (CONT)



EL8PV011

2-9. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT.

Preliminary servicing and adjustment of equipment covers:

1. Removal and replacement of chassis assembly.
2. Removal of home-copy strap for full duplex operation.
3. Installation of strap for common battery switchboard operation.
4. Inspection of terminal boards.

WARNING

Disconnect power cord before removing front panel and chassis assembly from transit case. When power is disconnected, some capacitors may retain dangerous voltages. Always discharge capacitors before working on equipment.

2-10. REMOVAL OF CHASSIS ASSEMBLY.

This task covers:

Removal of chassis assembly

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment TK-100/G

Materials/Parts

None

Personnel Required

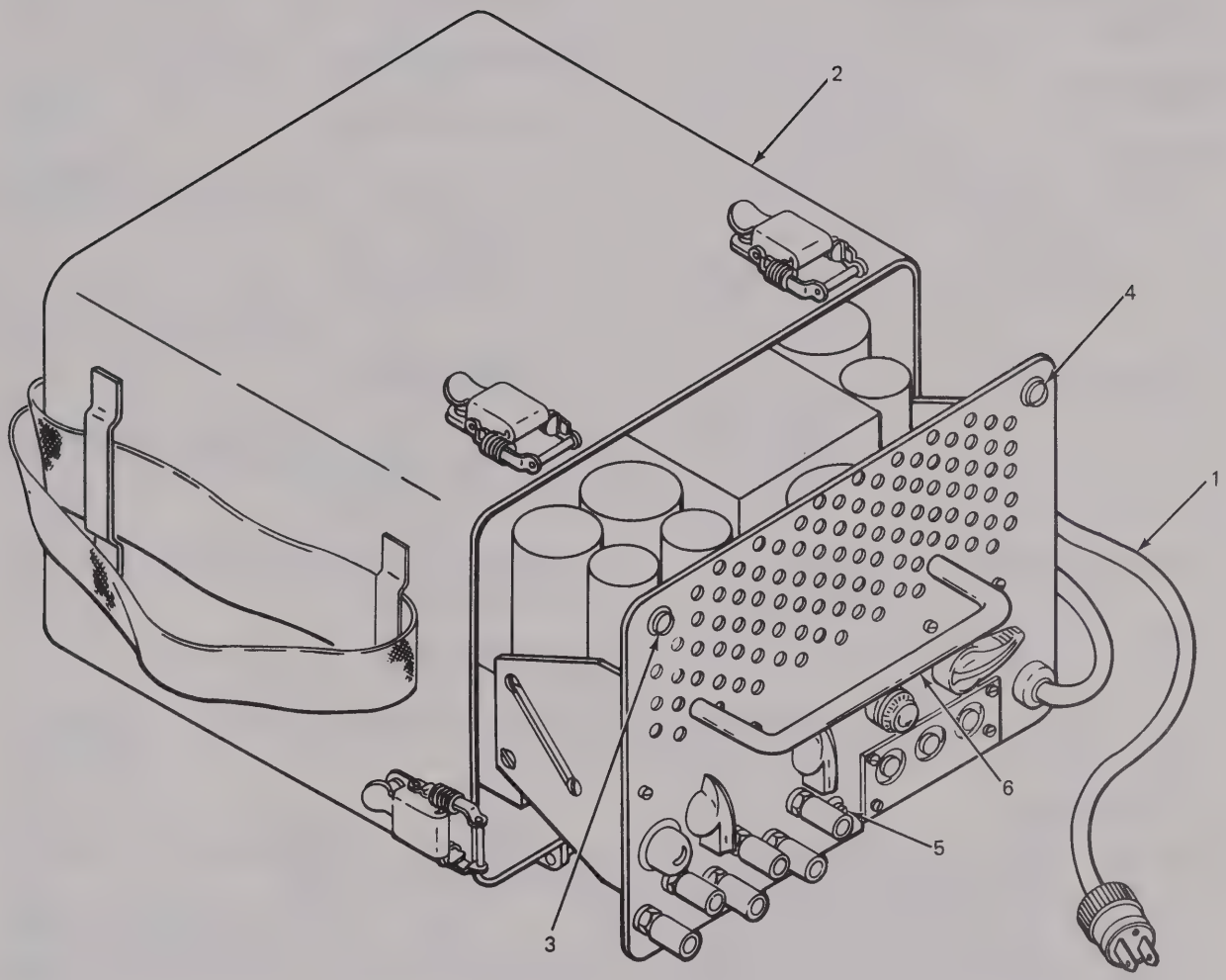
One technician

Equipment Condition

Not in operation

	LOCATION	ITEM	ACTION REMARKS
1.	Telegraph terminal	Power cord (1)	Remove from power source.
2.		Telegraph terminal (2)	Stand upright.
3.		Release screws (3), (4), (5)	Using screwdriver, loosen.
4.		Handle (6)	Pull to lift chassis assembly from transit case.

2-10. **REMOVAL OF CHASSIS ASSEMBLY.** (CONT)



EL8PV012

2-11. REMOVAL OF HOME-COPY STRAP FOR FULL DUPLEX OPERATION.

This task covers:

Removal

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment TK-100/G

Materials/Parts

None

Personnel Required

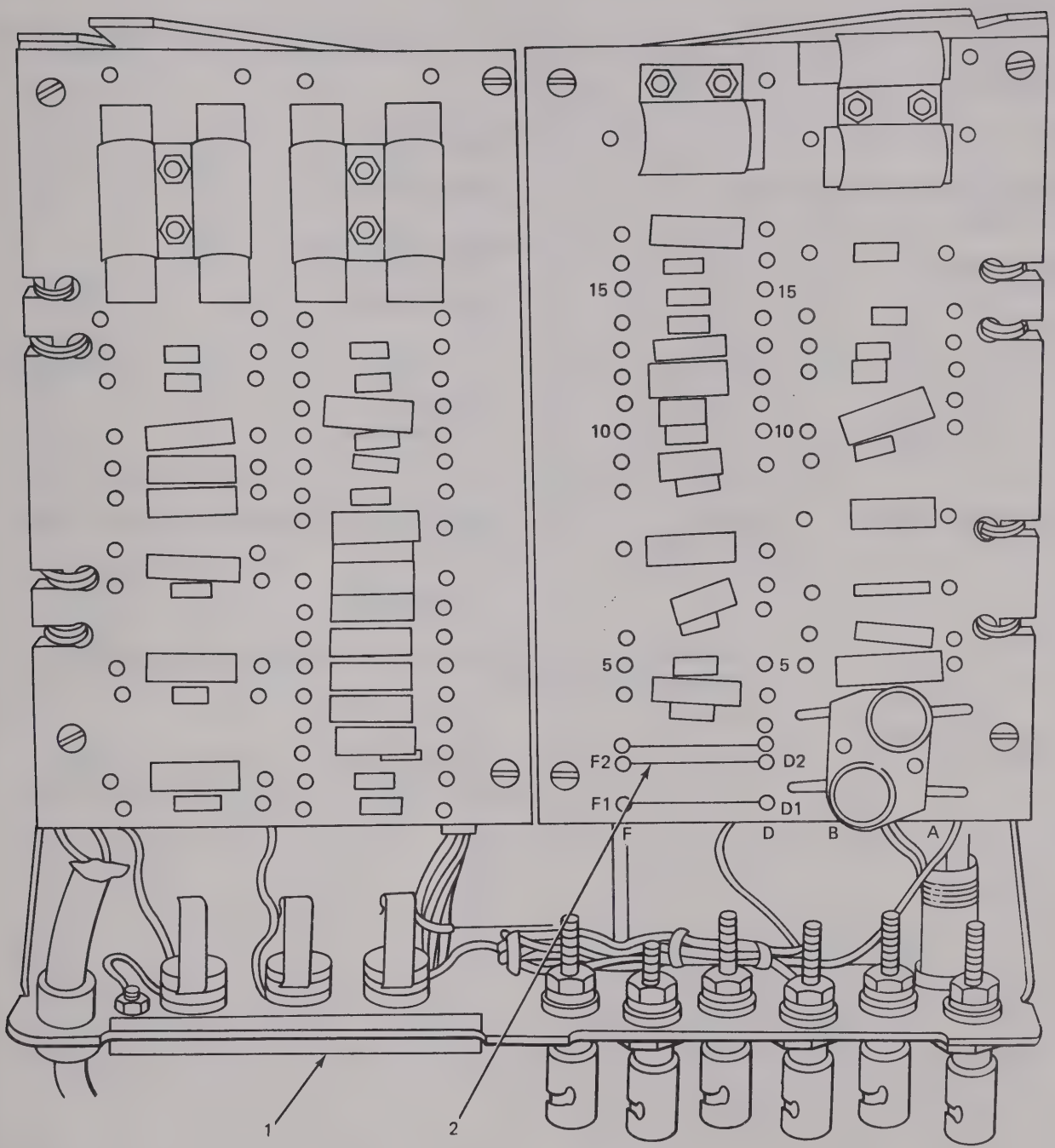
One technician

Equipment Condition

Not in operation

LOCATION	ITEM	ACTION / REMARKS
		WARNING When power to the equipment is disconnected, some capacitors may still retain dangerous voltages. Always discharge capacitors before working on equipment.
1. Telegraph terminal	Chassis assembly (1)	Remove from transit case and turn over. See paragraph 2-10.
		CAUTION Overheating the terminals will affect components on opposite side of terminal board.
2. Terminal board ABDF	Strap (2)	Using soldering iron, unsolder strap between terminals F2 and D2.

2-11. REMOVAL OF HOME-COPY STRAP FOR FULL DUPLEX OPERATION. (CONT)



BOTTOM VIEW OF CHASSIS

EL8PV013

2-12. INSTALLATION OF STRAP FOR COMMON BATTERY SWITCHBOARD OPERATION.

This task covers:

Installation

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment TK-100/G

Materials/Parts

None

Personnel Required

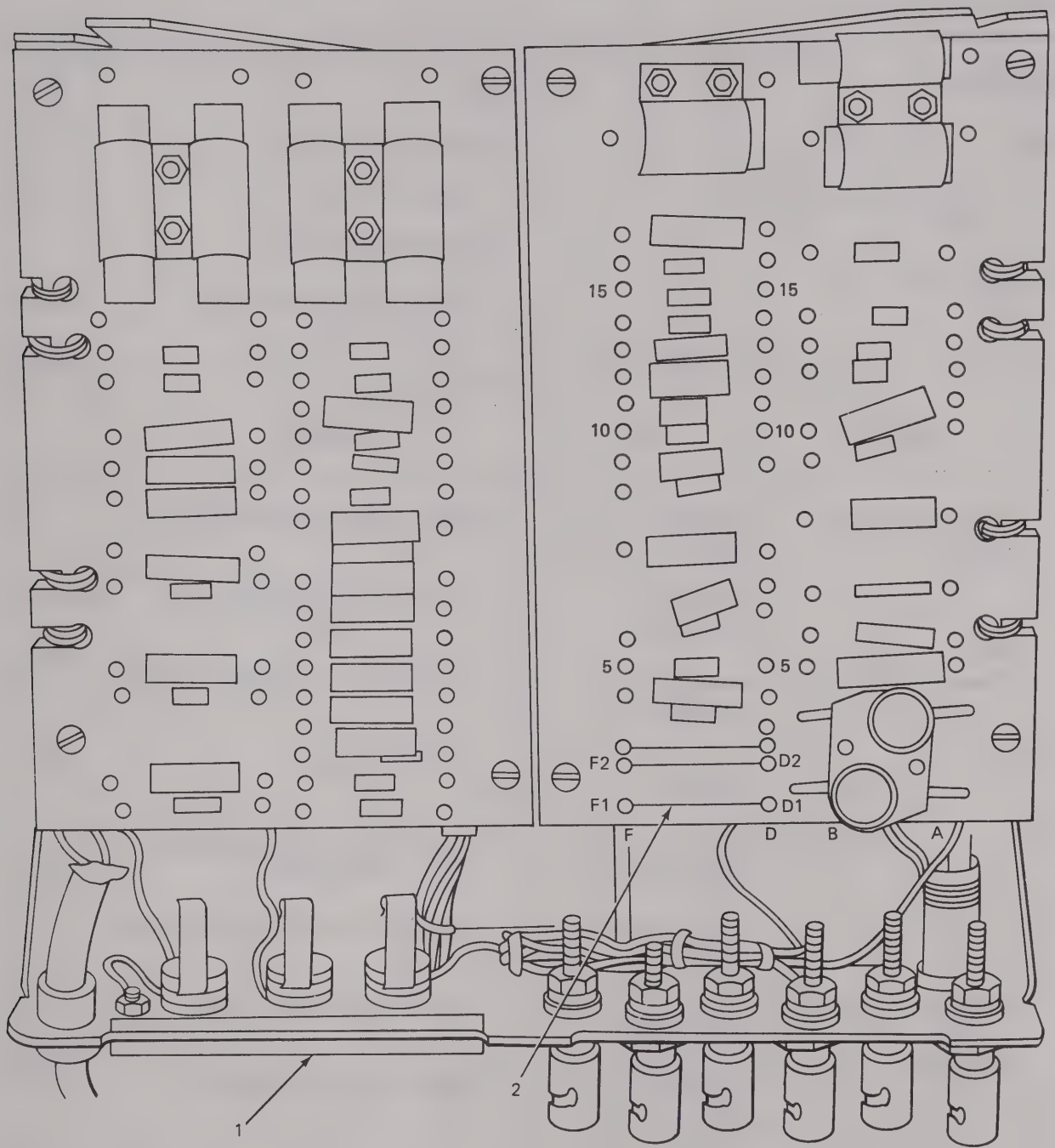
One technician

Equipment Condition

Not in operation

	LOCATION	ITEM	ACTION / REMARKS
1.	Telegraph terminal	Chassis assembly (1)	Remove from transit case and turn over. See paragraph 2-10.
			CAUTION Overheating the terminals will affect components on opposite side of terminal board.
2.	Terminal board ABDF	Strap (2)	Using soldering iron, solder strap between terminals F1 and D1 on terminal board ABDF.

2-12. INSTALLATION OF STRAP FOR COMMON BATTERY SWITCHBOARD OPERATION. (CONT)



BOTTOM VIEW OF CHASSIS

EL8PV014

2-13. INSPECTION OF TERMINAL BOARDS.

This task covers:

Inspection of terminal boards

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment TK-100/G

Materials/Parts

None

Personnel Required

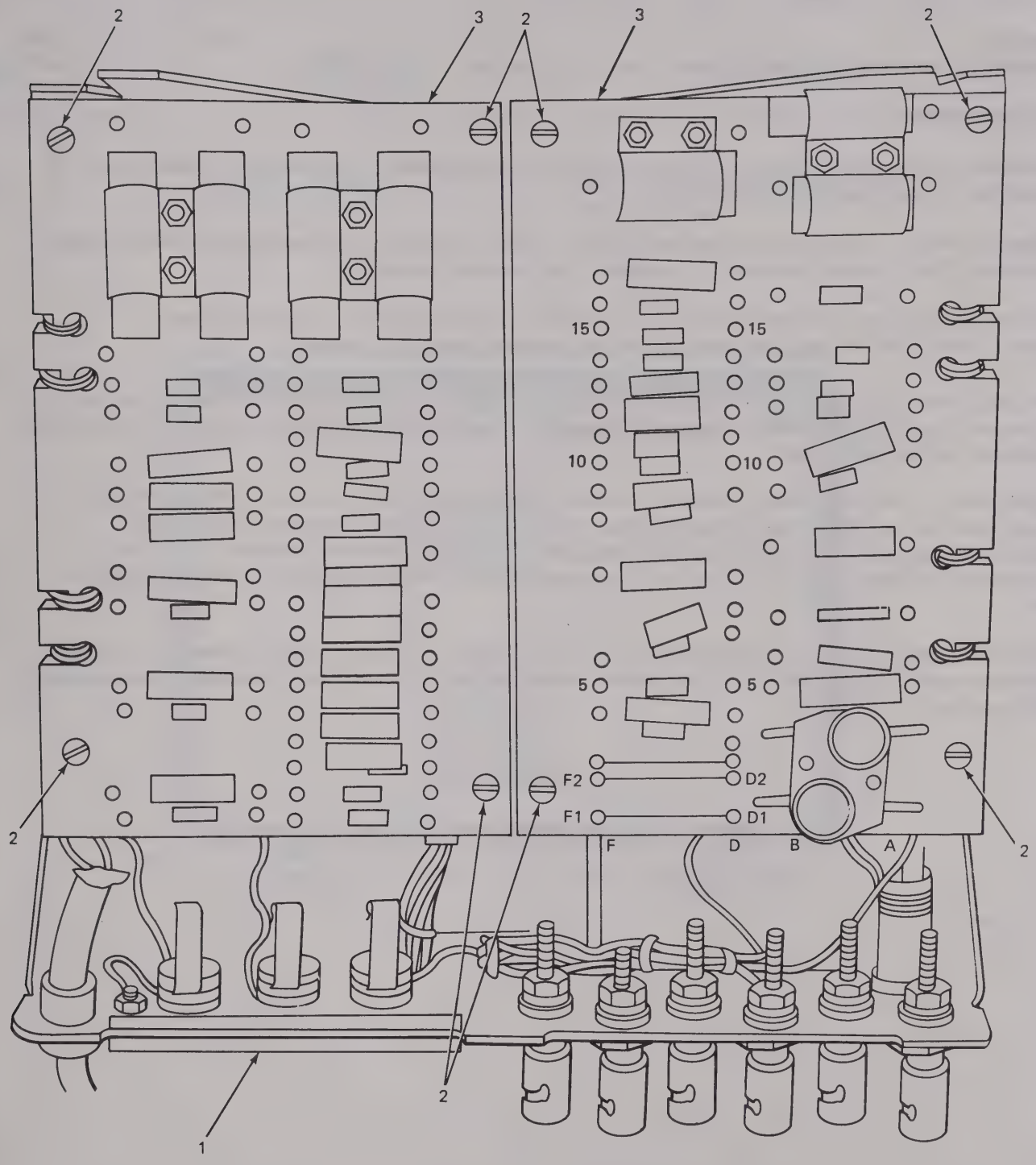
One technician

Equipment Condition

Power cord removed from power source.

	LOCATION	ITEM	ACTION **REMARKS**
1.	Telegraph terminal	Chassis assembly (1)	Remove. See paragraph 2-10.
2.		Chassis assembly (1)	Turn assembly upside down.
3.	Chassis assembly	Board retaining screws (2)	Using flat-tip screwdriver, remove.
4.		Terminal boards (3)	Lift and inspect.
5.		Terminal boards (3)	Position on chassis assembly. **Aline holes.**
6.		Board retaining screws (2)	Using flat-tip screwdriver, install.
7.	Telegraph terminal	Chassis assembly (1)	Turn assembly right side up.
8.		Chassis assembly (1)	Install. See paragraph 2-10.

2-13. INSPECTION OF TERMINAL BOARDS. (CONT)



BOTTOM VIEW OF CHASSIS

EL8PV015

Section III ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES

Subject	Para	Page
Overview	2-14	2-20
Organizational Preventive Maintenance Checks and Services		2-21

2-14. OVERVIEW.

Preventive Maintenance Checks and Services (PMCS) are the weekly requirements to keep your equipment in good operating condition.

Weekly (W) PMCS are to be performed every seven days for an eight hour per day operation. Adjust the weekly PMCS interval to meet the needs of the operating conditions.

If the equipment fails to operate, refer to organizational troubleshooting (para 2-15) in this manual. Use TM 38-750 as a guide for reporting problems and using forms.

If the equipment must be kept in service continuously, check and service only the things that can be checked and serviced without disturbing operation. Make complete checks and services when the equipment can be shut down.

Routine checks like equipment inventory, cleaning, checking for frayed cables, storing items not in use, and checking for loose hardware, nuts, bolts, and screws are not listed in the PMCS table. You should do these things any time that you see that they need to be done. If you find a routine check listed in the PMCS table, it is because other persons reported problems with this item.

The Item Number column in the PMCS table is to be used as a source of item numbers for the TM Number column on DA FORM 2404, Equipment Inspection and Maintenance Worksheet, for recording PMCS results.

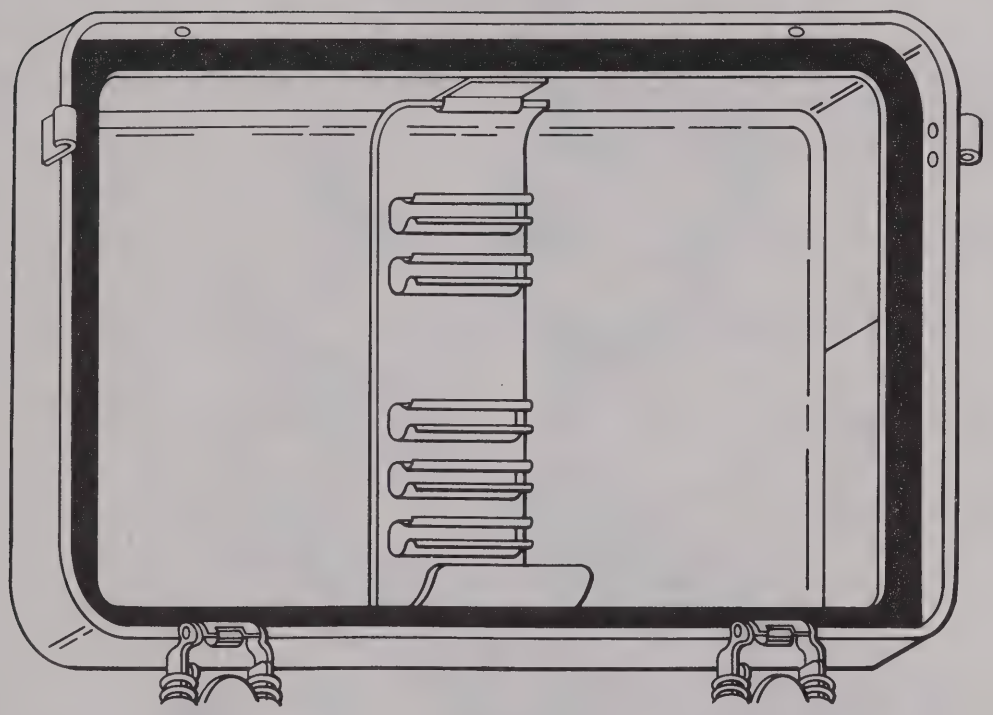
NOTE

Always keep in mind the CAUTIONS and WARNINGS.

ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES

W - WEEKLY

ITEM NO.	INTERVAL W	ITEM TO BE INSPECTED	PROCEDURE
1	•	Cover assembly	Inspect cover for dirt, leaks, and damaged gasket.

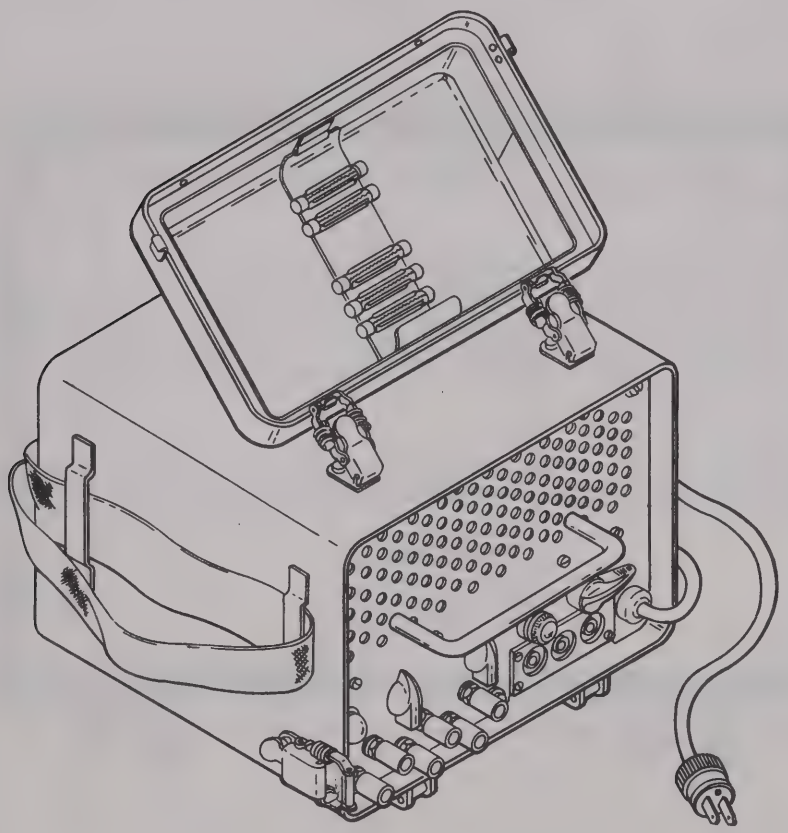


EL8PV016

ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES. (CONT)

W - WEEKLY

ITEM NO.	INTERVAL W	ITEM TO BE INSPECTED	PROCEDURE
2	•	Spare fuseholder	Check that fuseholder mounting is secured to cover assembly. Check that fuses are secure and not damaged in their holder.

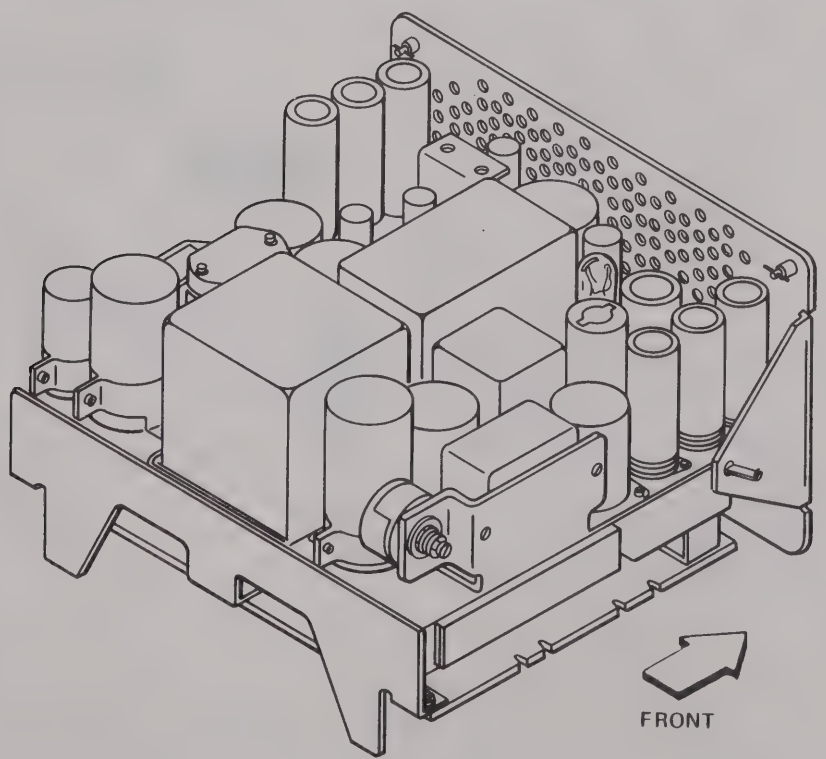


EL8PV017

ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES. (CONT)

W - WEEKLY

ITEM NO.	INTERVAL W	ITEM TO BE INSPECTED	PROCEDURE
			WARNING Disconnect the power cord before working on equipment. When power is disconnected, some capacitors may retain dangerous voltages. Always discharge capacitors.
3	•	Fuses, tubes and lamps	Check seating of all removable items such as tubes, semiconductors and lamps. See paragraph 2-10 for removal of chassis assembly. **NOTE** Press directly on tube, not tube shield, to check seating.

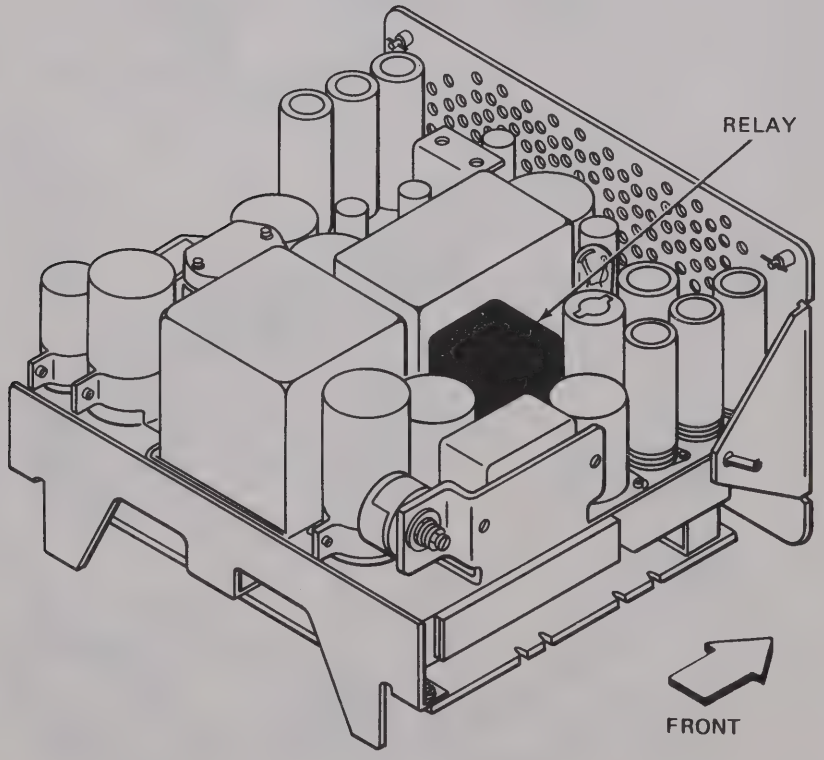


EL8PV018

ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES. (CONT)

W – WEEKLY

ITEM NO.	INTERVAL W	ITEM TO BE INSPECTED	PROCEDURE
			WARNING Disconnect the power cord before working on equipment. When power is disconnected, some capacitors may retain dangerous voltages. Always discharge capacitors.
4	•	Relay	Inspect relay for loose mountings. See paragraph 2-10 for removal of chassis assembly.

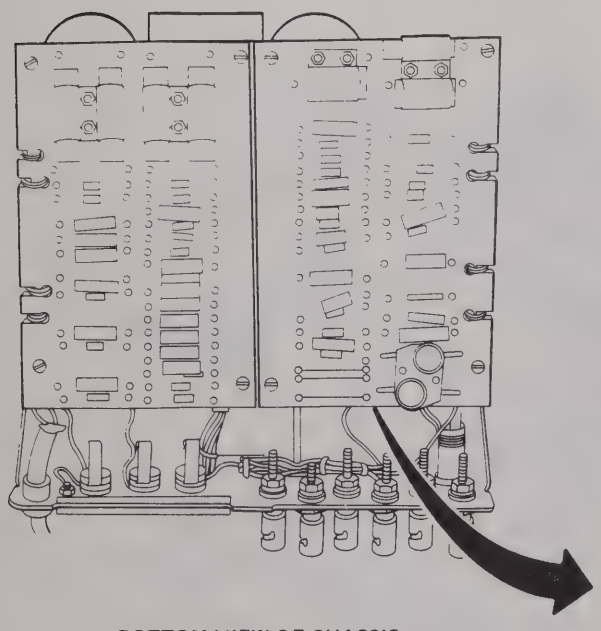


EL8PV019

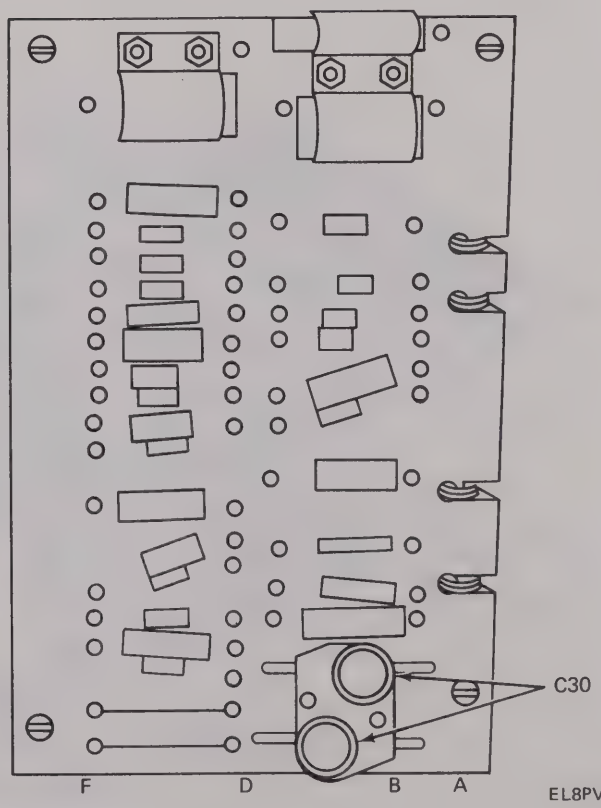
ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES. (CONT)

W - WEEKLY

ITEM NO.	INTERVAL W	ITEM TO BE INSPECTED	PROCEDURE
			NOTE Disconnect the power cord before working on equipment. When power is disconnected, some capacitors may retain dangerous voltages. Always discharge capacitors.
5	•	Variable Capacitor (C30)	Inspect variable capacitor for dirt, loose mountings and moisture. See paragraph 2-10 for removal of chassis assembly.



BOTTOM VIEW OF CHASSIS

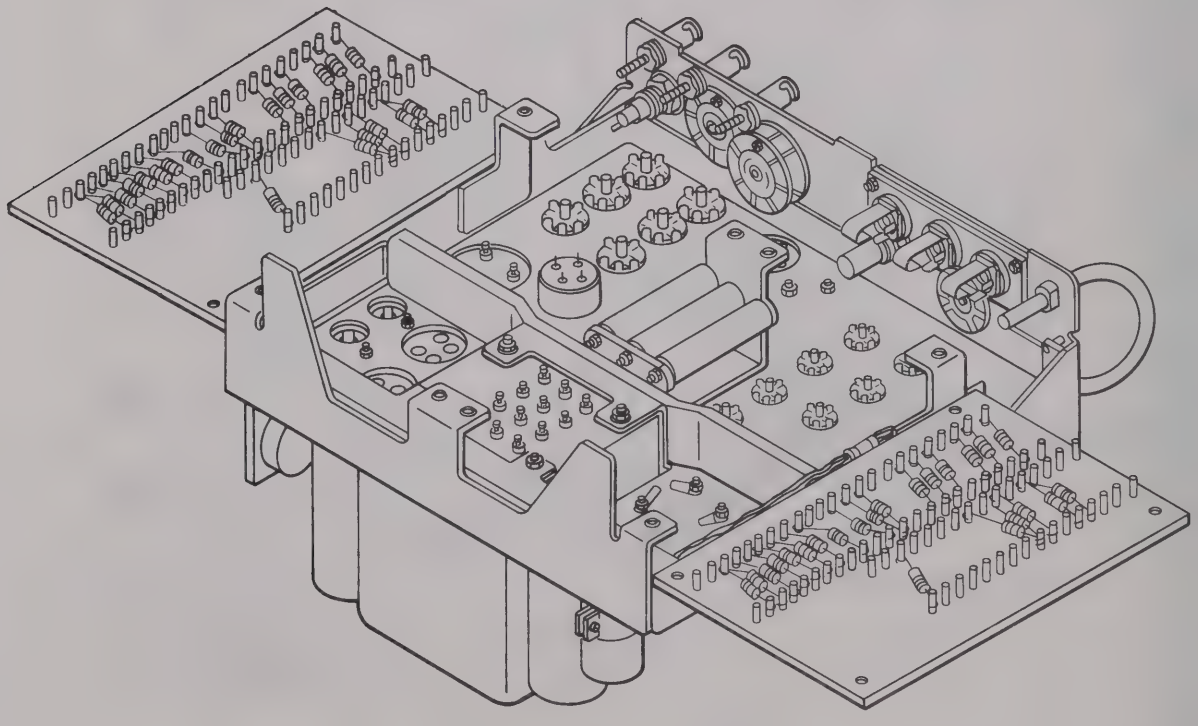


EL8PV020

ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES. (CONT)

W - WEEKLY

ITEM NO.	INTERVAL W	ITEM TO BE INSPECTED	PROCEDURE
			WARNING Disconnect the power cord before working on equipment. When power is disconnected, some capacitors may retain dangerous voltages. Always discharge capacitors.
6	•	Resistors, bushings and insulators	Inspect resistors, bushings and insulators for cracks, chipping, blistering, moisture and discoloration. See paragraph 2-10 for removal of chassis assembly. See paragraph 2-13 for inspection procedures for terminal boards.



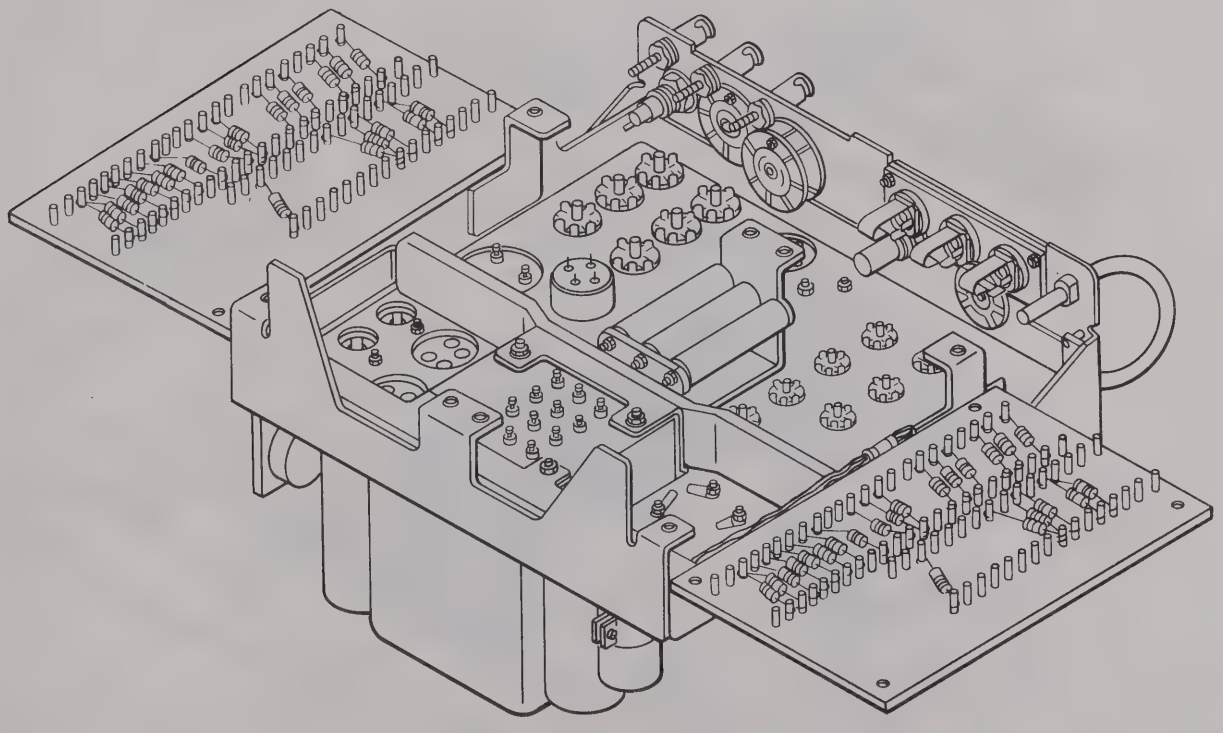
BOTTOM VIEW OF CHASSIS

EL8PV021

ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES. (CONT)

W - WEEKLY

ITEM NO.	INTERVAL W	ITEM TO BE INSPECTED	PROCEDURE
			WARNING Disconnect the power cord before working on equipment. When power is disconnected, some capacitors may retain dangerous voltages. Always discharge capacitors.
7	•	Switches and interior of chassis	Tighten switches and clean interiors of chassis not readily accessible. See paragraph 2-10 for removal of chassis assembly. See paragraph 2-13 for inspection procedures for terminal boards.



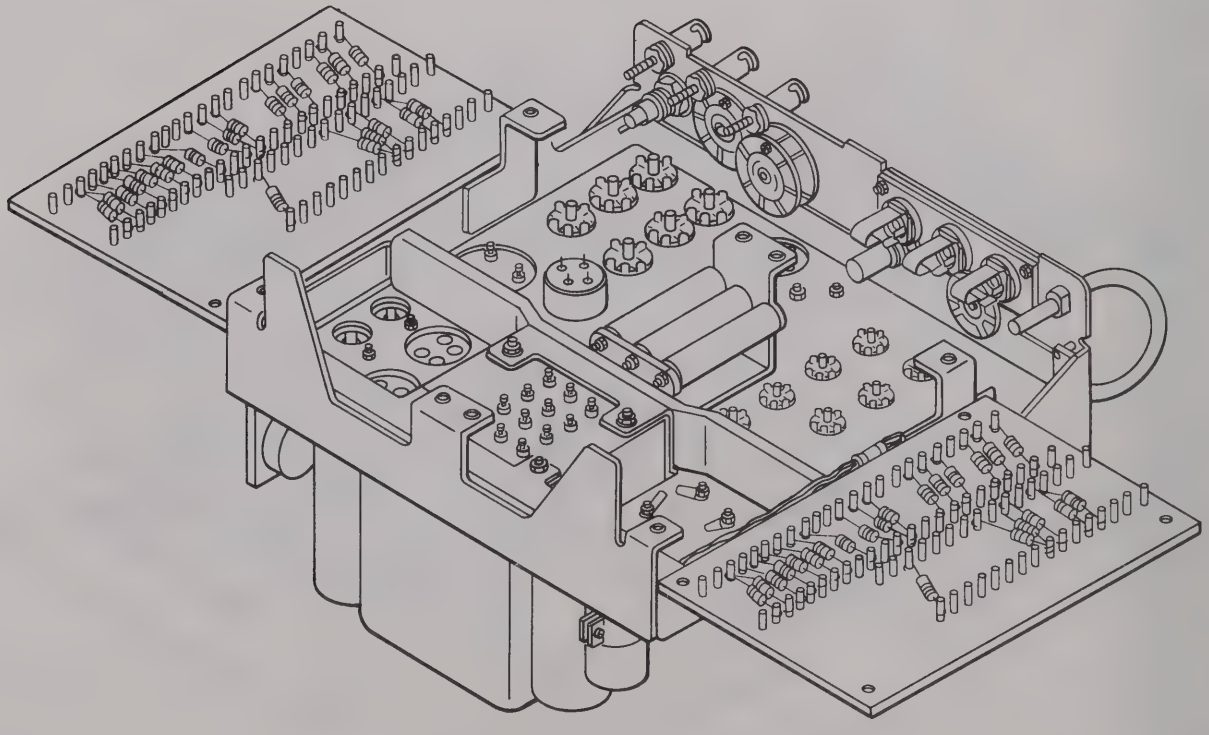
BOTTOM VIEW OF CHASSIS

EL8PV022

ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES. (CONT)

W – WEEKLY

ITEM NO.	INTERVAL W	ITEM TO BE INSPECTED	PROCEDURE
			WARNING Disconnect the power cord before working on equipment. When power is disconnected, some capacitors may retain dangerous voltages. Always discharge capacitors.
8	•	Terminals of large capacitors	Inspect terminals of large capacitors for dirt, corrosion, and loose contacts. See paragraph 2-10 for removal of chassis assembly. See paragraph 2-13 for inspection procedures for terminal boards.



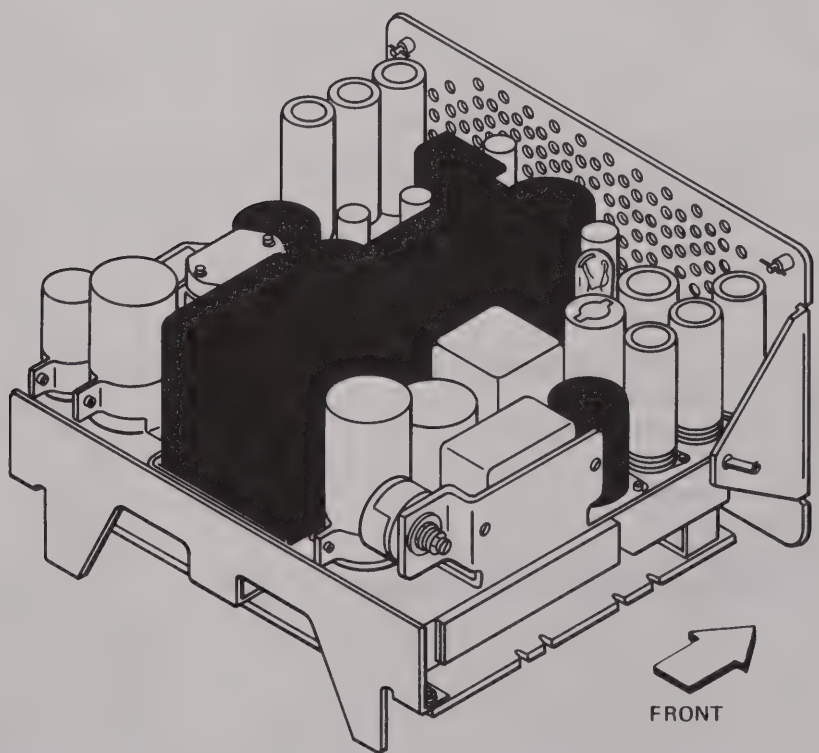
BOTTOM VIEW OF CHASSIS

EL8PV023

ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (CONT)

W - WEEKLY

ITEM NO.	INTERVAL W	ITEM TO BE INSPECTED	PROCEDURE
			WARNING Disconnect the power cord before working on equipment. When power is disconnected, some capacitors may retain dangerous voltages. Always discharge capacitors.
9	•	Transformers and chokes	Inspect transformers and chokes for overheating and oil leakage. See paragraph 2-10 for removal of chassis assembly. **NOTE** Oil leakage may occur from bottom of transformers. See paragraph 2-13 for inspection procedures for terminal boards.



EL8PV024

Section IV TROUBLESHOOTING

Subject	Para	Page
Overview	2-15	2-30
Symptom Index		2-30
Troubleshooting		2-32

2-15. OVERVIEW

The troubleshooting table lists problems which you may find when operating the equipment or when doing the organizational PMCS.

The troubleshooting table does not list all of the problems which you may find. If your problem is not listed, report it to a higher level of maintenance.

When working on any problems, be sure to report your work on the forms in TM 38-750.

To use this troubleshooting table, first find your problem in the symptom index. The symptom index is organized by component and problems for each component. The symptom index will give you a page number on which you will find your problem and the possible corrections. Turn to that page, find your problem, and follow the procedures shown to correct it.

SYMPTOM INDEX

	Page
ELECTRON TUBES	
Tubes	
Fail to light	2-34
NEON GLOWLAMP	
Neon glowlamp	
Lit when teletypewriter is receiving	2-41
Lit when teletypewriter is transmitting over 2- or 4-wire push-to-talk radio circuit	2-42
TELETYPEWRITER	
Teletypewriter	
Transmission but no home copy (all types of operation except full duplex)	2-32
No transmission or home copy	2-35
Transmission and home copy, but cannot receive from distant terminal	2-36
Receives but cannot transmit	2-37
Transmits but cannot receive	2-38
Runs open in all 4W-2W-TEL switch positions, runs open in all NORM-REC-SEND switch positions	2-39

SYMPTOM INDEX (CONT)

Runs open in all 4W-2W-TEL switch positions, runs open in NORM and SEND position, but not in REC position 2-40
Runs open NORM-REC-SEND switch set to SEND position for push-to-talk radio operation 2-43
Distorted copy when teletypewriter is receiving 2-44
Unable to break transmission from distant terminal or signal LB Switchboard using RING switch 2-45
Unable to signal CB switchboard using 4W-2W-TEL switch 2-46

WARNING

While doing troubleshooting procedures for the telegraph terminal, observe the following WARNINGS:

When Troubleshooting Telegraph Terminal TH-5/TG or TH-5A/TG be careful. Voltages as high as 560 volts ac are present internally.

The electron tube shields are hot. Do not attempt to remove with fingers until they cool.

Always discharge capacitors. They may retain dangerous voltages after the power cord is disconnected.

TROUBLESHOOTING

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION

1. Teletypewriter transmission but no home copy (all types of operation except full duplex).

Step 1. Check electron tubes V1, V2, and semiconductors CR3 and CR4.

a. See paragraph 2-22 for electron tube test and replacement procedure.

b. Test semiconductors with a multimeter. See paragraph 2-23 for voltage and resistance measurement procedure.

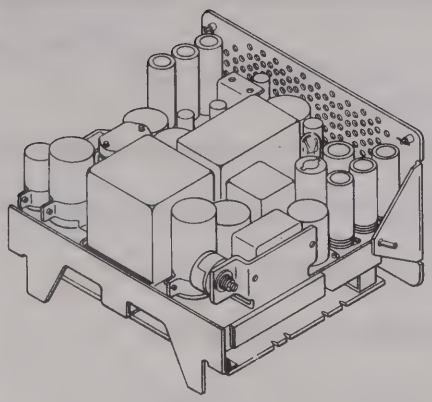
Step 2. Check tube-socket voltage and resistance at V1, V2, CR3, CR4.

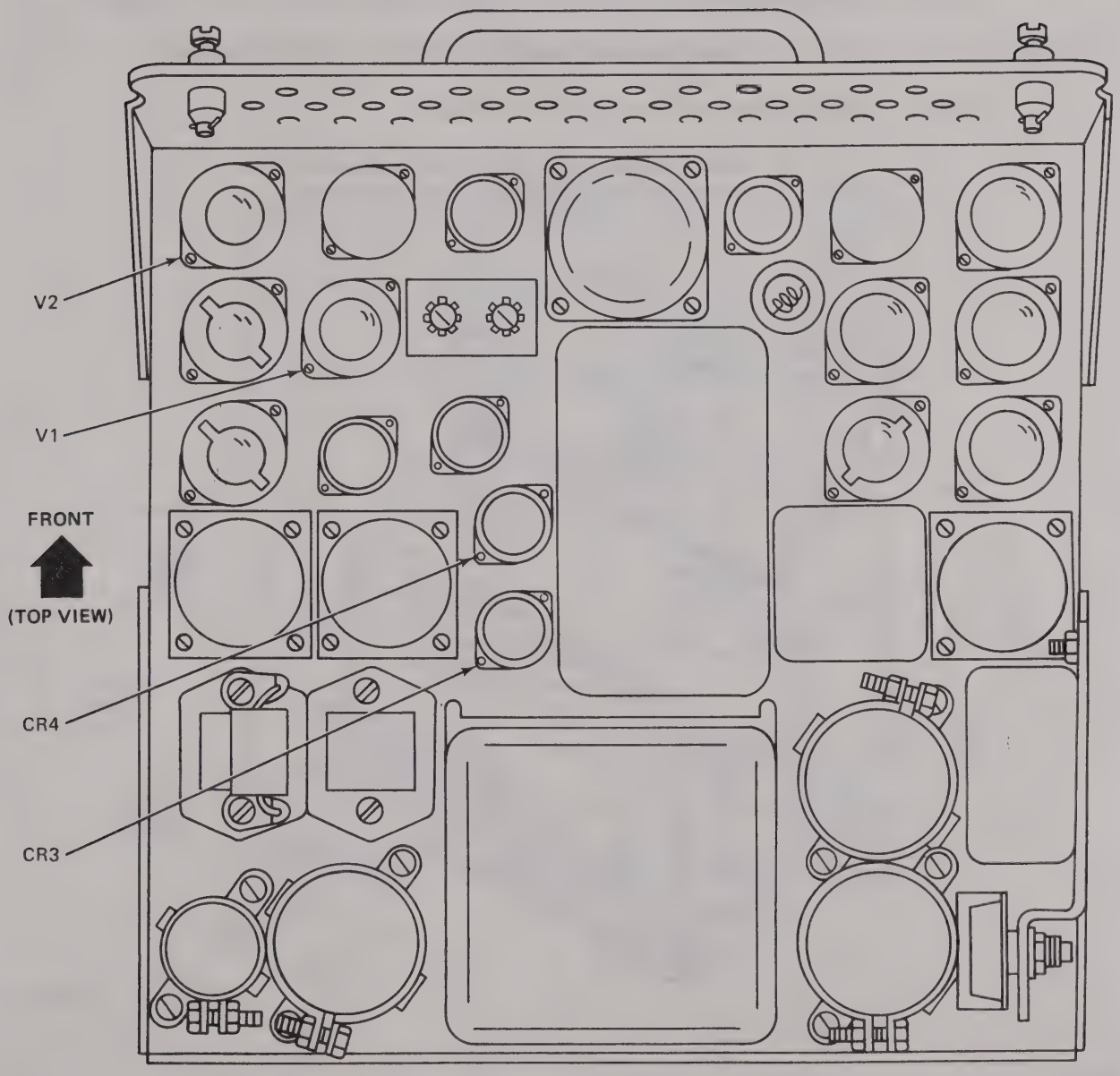
See paragraph 2-23 for voltage and resistance measurement procedure.

Step 3. Check if strap is missing between terminal D2 and F2 on terminal board A. See paragraph 2-11.

Replace strap between terminals D2 and F2 on terminal board A. See paragraph 2-11.

TROUBLESHOOTING (CONT)





EL8PV025

TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION

2. Tubes fail to light.

Step 1. Check 1.5 amp fuse.

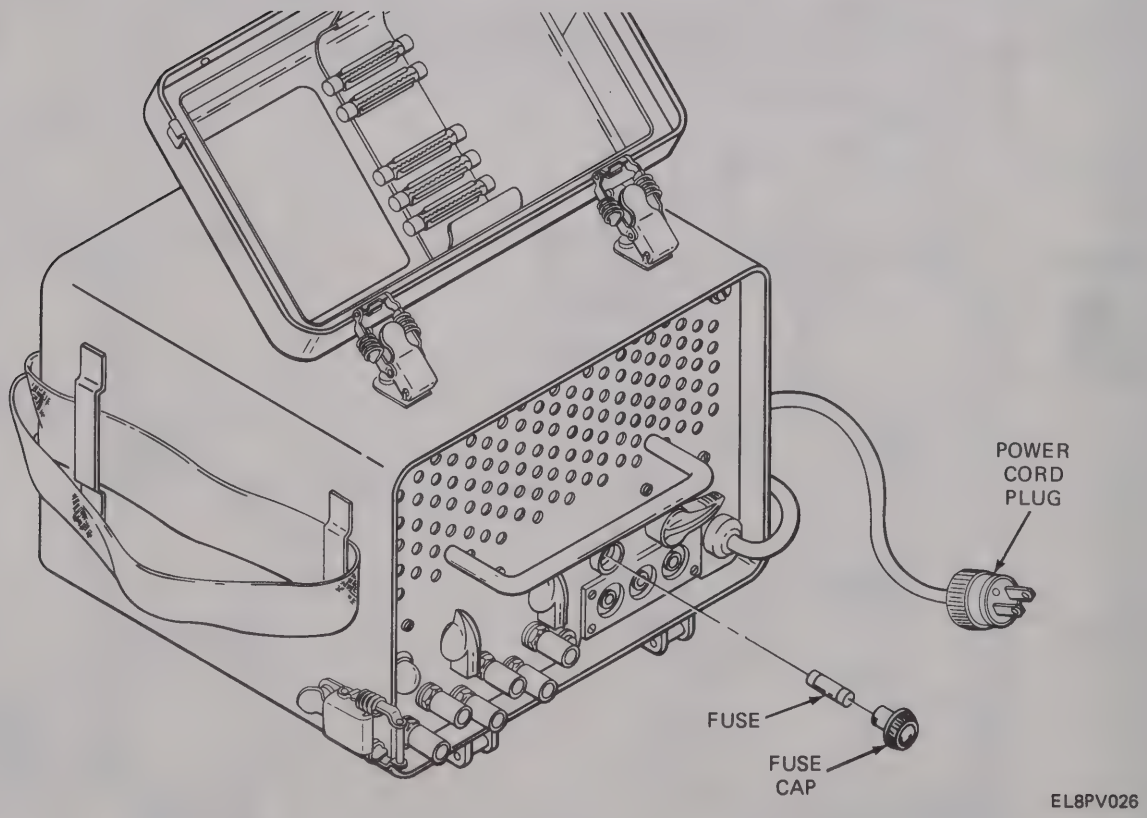
Replace 1.5 amp fuse. See TM 11-5805-246-10 for procedure.

Step 2. Check FUSE cap.

Replace fuse cap. See TM 11-5805-246-10 for procedure.

Step 3. Check power cord and plug for damage.

a. Replace power cord plug. See paragraph 2-20.
b. Report to a higher level of maintenance.



TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

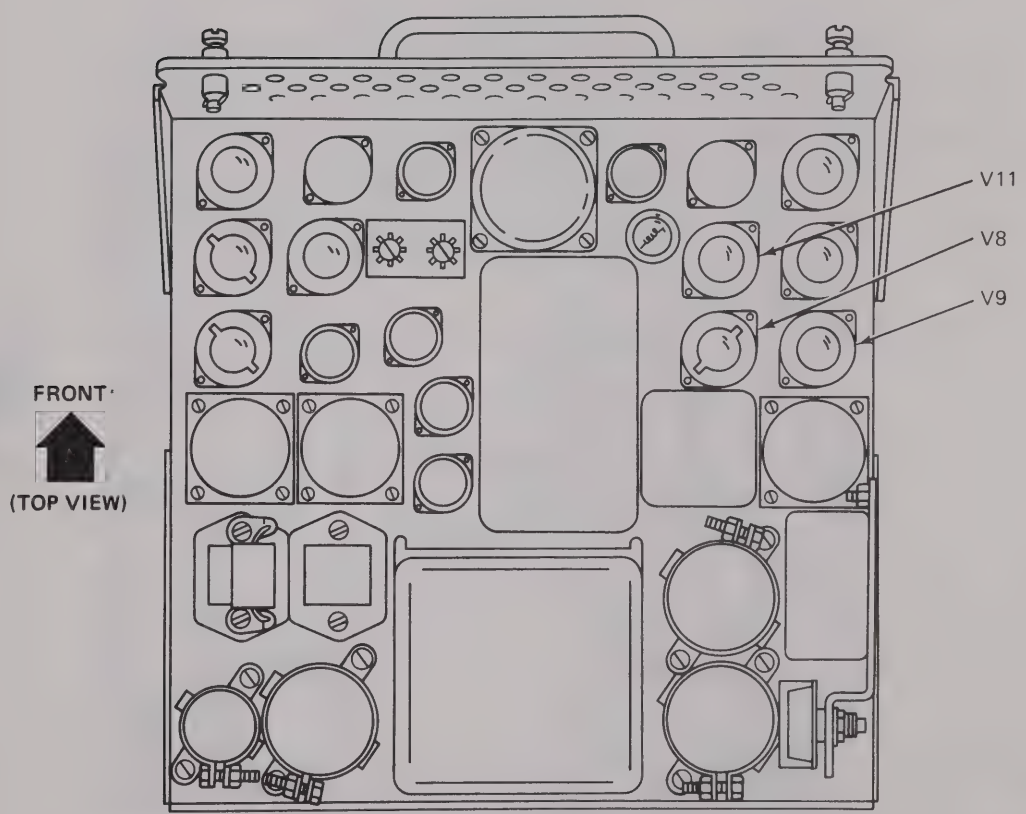
3. No teletypewriter transmission or home copy.

Step 1. Check electron tubes V8, V9, or V11.

See paragraph 2-22 for electron tube test and replacement procedure.

Step 2. Check tube socket voltage and resistance at V8, V9, or V11.

See paragraph 2-23 for voltage and resistance measurement procedure.



TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

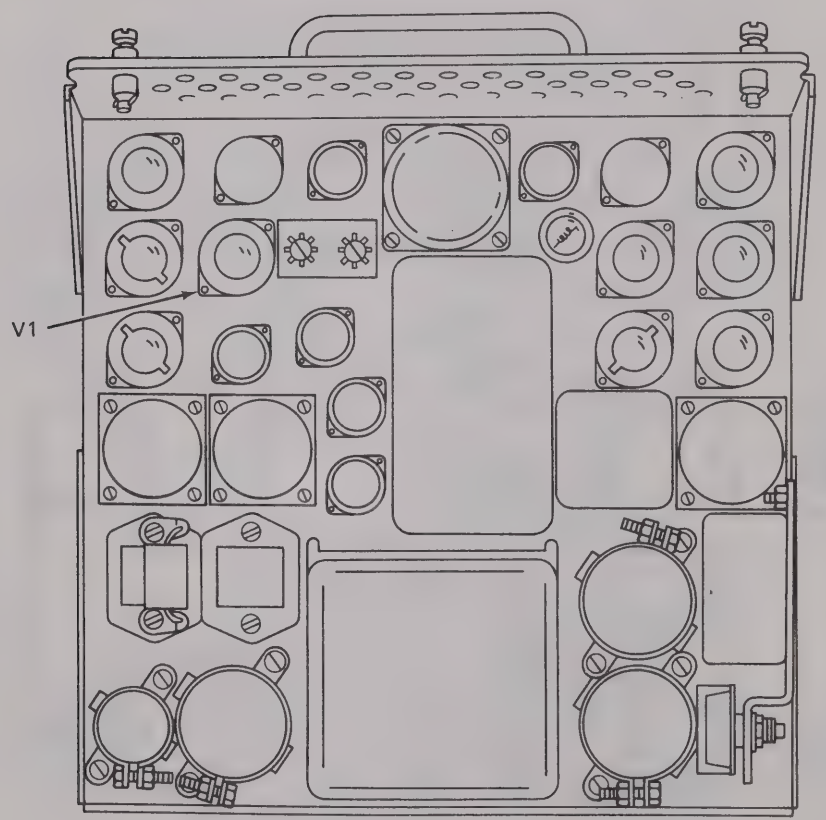
4. Teletypewriter transmission and home copy, but cannot receive from distant terminal.

Step 1. Check electron tube V1.

See paragraph 2-22 for electron tube test and replacement procedure.

Step 2. Check tube socket voltage and resistance at V1.

See paragraph 2-23 for voltage and resistance measurement procedure.



TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION

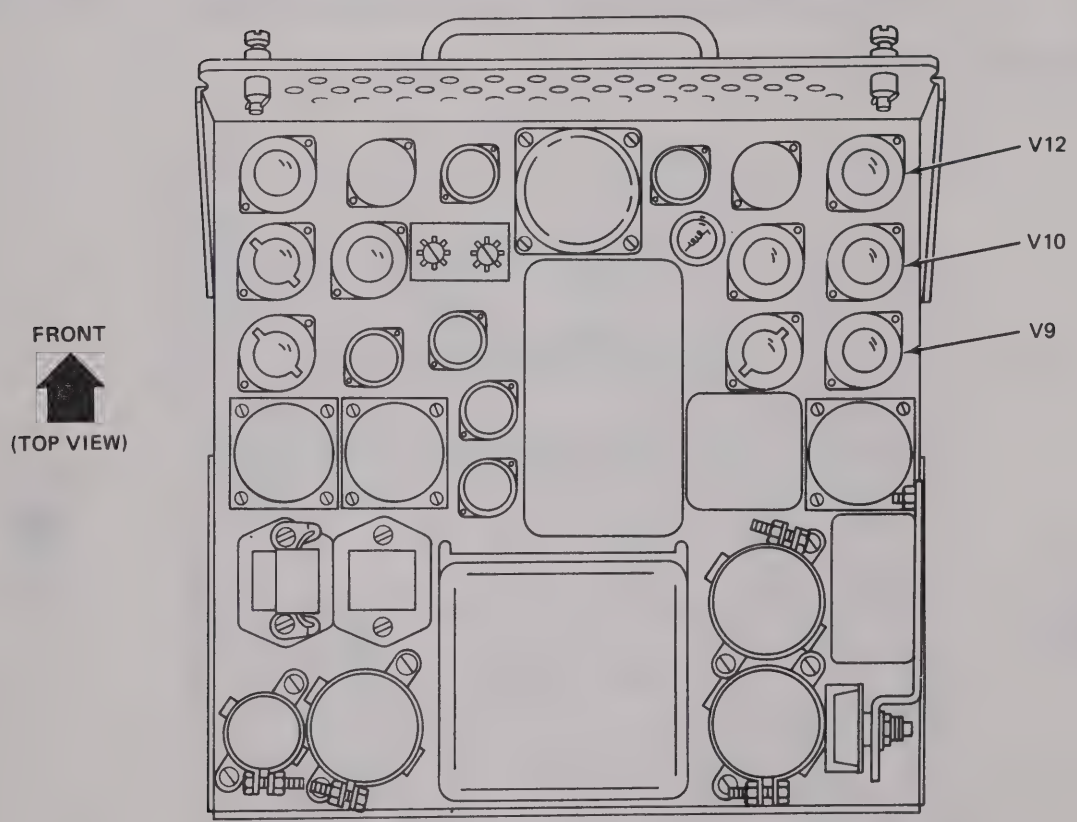
5. Teletypewriter receives but cannot transmit.

Step 1. Check electron tubes V9, V10, or V12.

See paragraph 2-22 for electron tube test and replacement procedure.

Step 2. Check tube socket voltage and resistance at V9, V10, or V12.

See paragraph 2-23 for voltage and resistance measurement procedure.



TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION

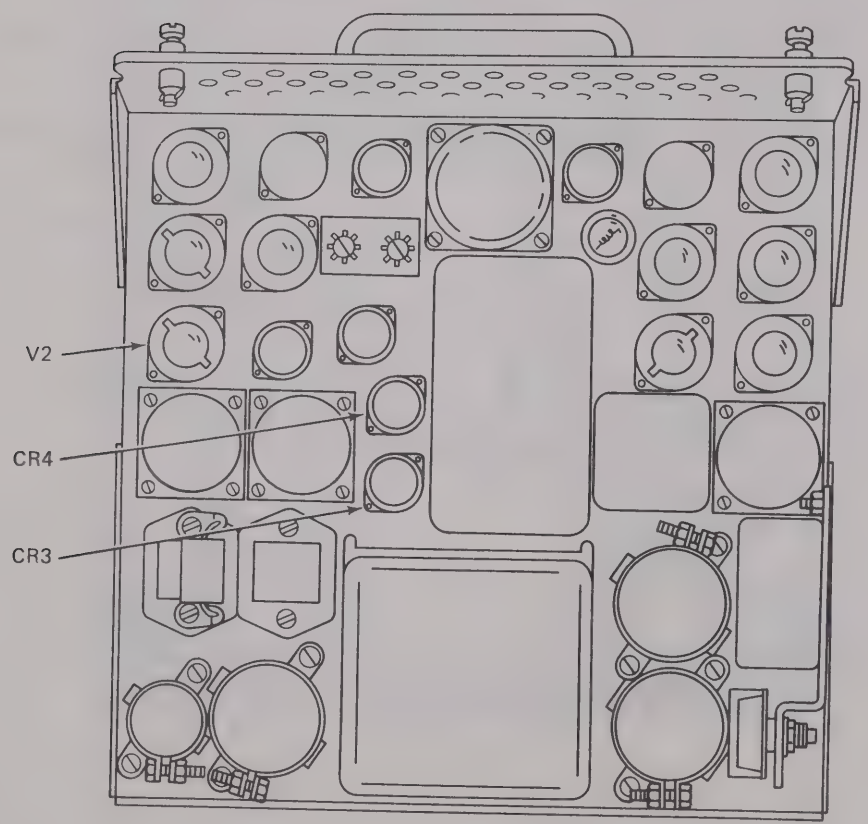
6. Teletypewriter transmits but cannot receive.

Step 1. Check electron tube V2, and semiconductors CR3 and CR4.

a. See paragraph 2-22 for electron tube test and replacement procedure.

b. Test semiconductors CR3 and CR4 with a multimeter. See paragraph 2-23 for voltage and resistance measurement procedure.

Step 2. Check tube socket voltage and resistance at V2, CR3, or CR4. See paragraph 2-23 for voltage and resistance measurement procedure.



TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION

7. Teletypewriter runs open in all 4W-2W-TEL switch positions. Teletypewriter runs open in all NORM-REC-SEND switch positions.

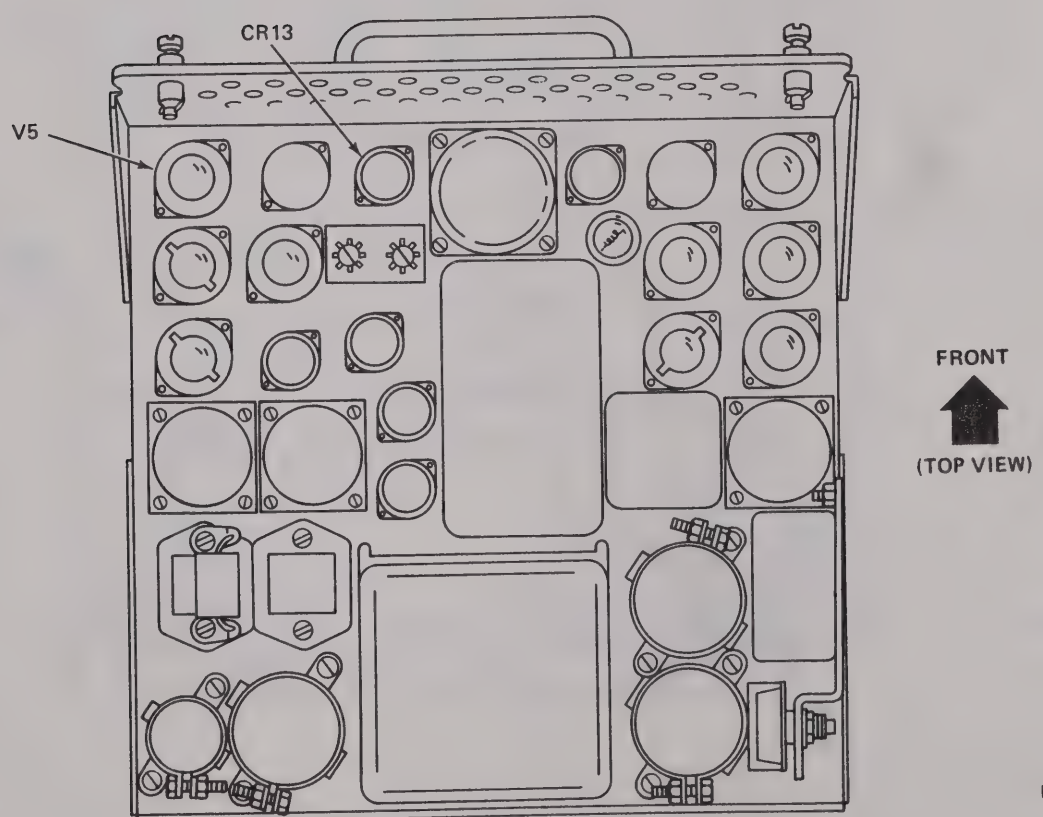
Step 1. Check electron tube V5, or semiconductor CR13.

a. Test electron tube V5. See paragraph 2-22 for electron tube test and replacement procedure. Replace if tube is bad.

b. Test semiconductor CR13 with a multimeter. See paragraph 2-23 for voltage and resistance measurement procedure.

Step 2. Check tube socket voltage and resistance at CR13 and V5.

See paragraph 2-23 for voltage and resistance measurement procedure.



TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

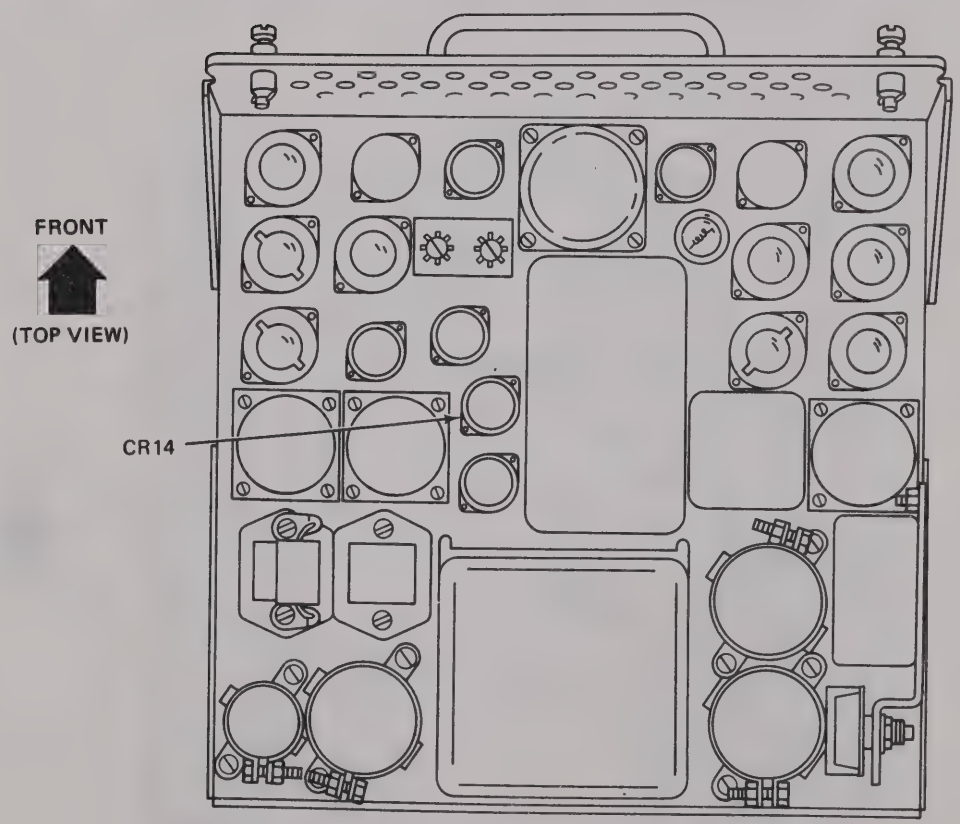
8. Teletypewriter runs open in all 4W-2W-TEL switch positions. Teletypewriter runs open in NORM and SEND positions but not in REC position.

Step 1. Check semiconductor CR14.

Test semiconductor CR14 with a multimeter. See paragraph 2-23 for voltage and resistance measurement procedure.

Step 2. Check tube socket voltage and resistance at CR14.

See paragraph 2-23 for voltage and resistance measurements procedure.



TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION

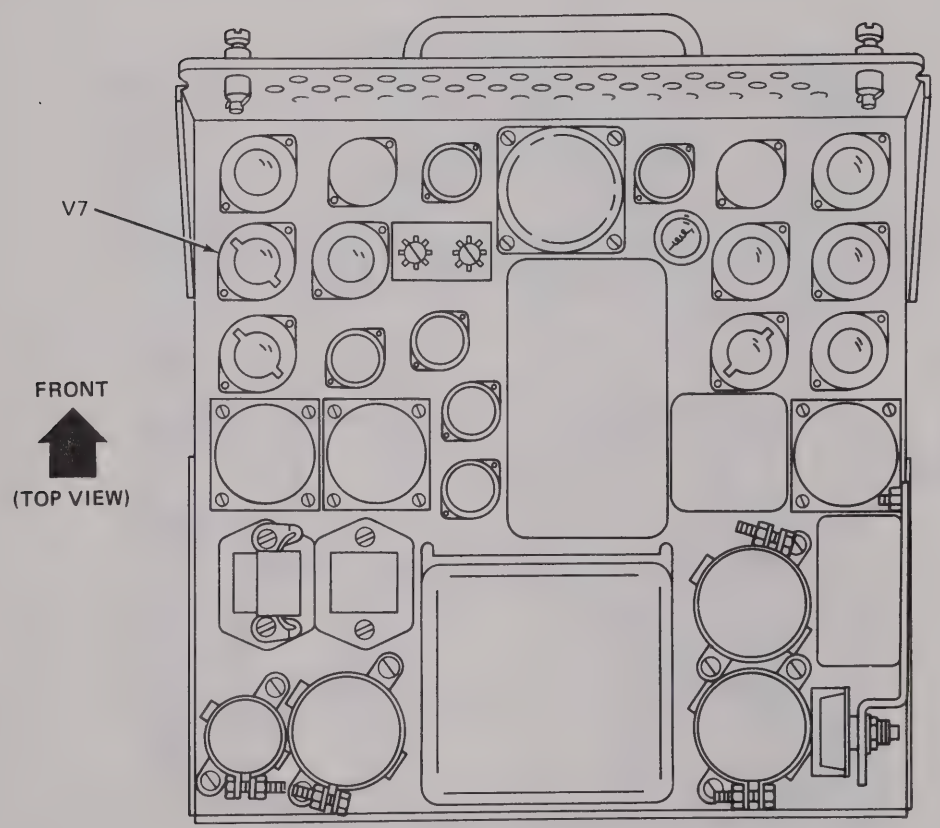
9. Neon glowlamp lit when teletypewriter is receiving.

Step 1. Check electron tube V7.

Test electron tube V7. See paragraph 2-22 for electron tube test and replacement procedure. Replace if tube is bad.

Step 2. Check tube socket voltage and resistance at V7.

See paragraph 2-23 for voltage and resistance measurement procedure.



EL8PV033

TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

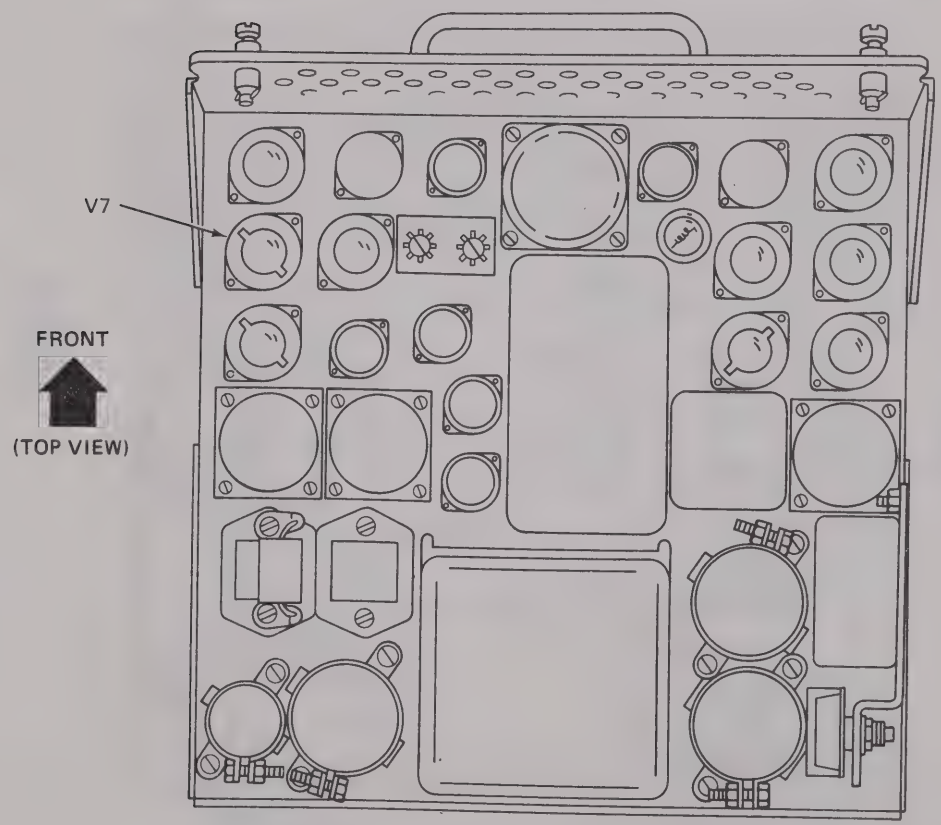
10. Neon glowlamp lit when teletypewriter is transmitting over 2- or 4-wire push-to-talk radio circuit.

Step 1. Check electron tube V7.

Test electron tube V7. See paragraph 2-22 for electron tube test and replacement procedure. Replace if tube is bad.

Step 2. Check tube socket voltage and resistance at V7.

See paragraph 2-23 for voltage and resistance measurement procedure.



EL8PV034

TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

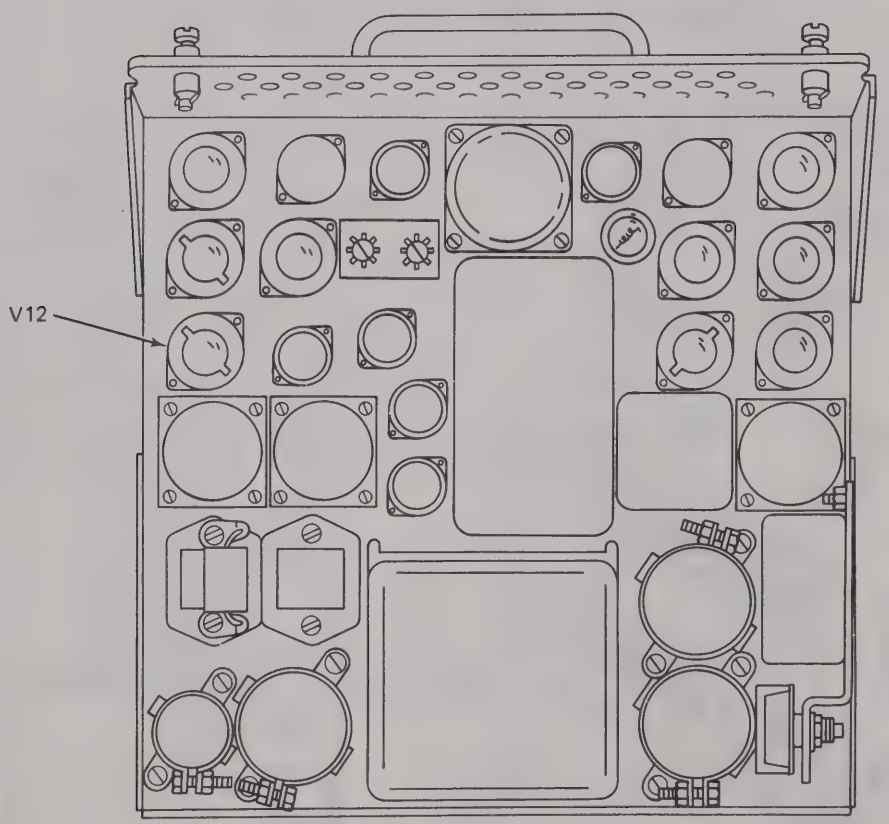
11. Teletypewriter runs open, NORM-REC-SEND switch set to SEND position for push-to-talk radio operation.

Step 1. Check electron tube V12.

See paragraph 2-22 for electron tube test and replacement procedure.

Step 2. Check tube socket voltage and resistance at V12.

See paragraph 2-23 for voltage and resistance measurement procedure.



TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION

12. Distorted copy when teletypewriter is receiving.

Step 1. Check electron tube V7.

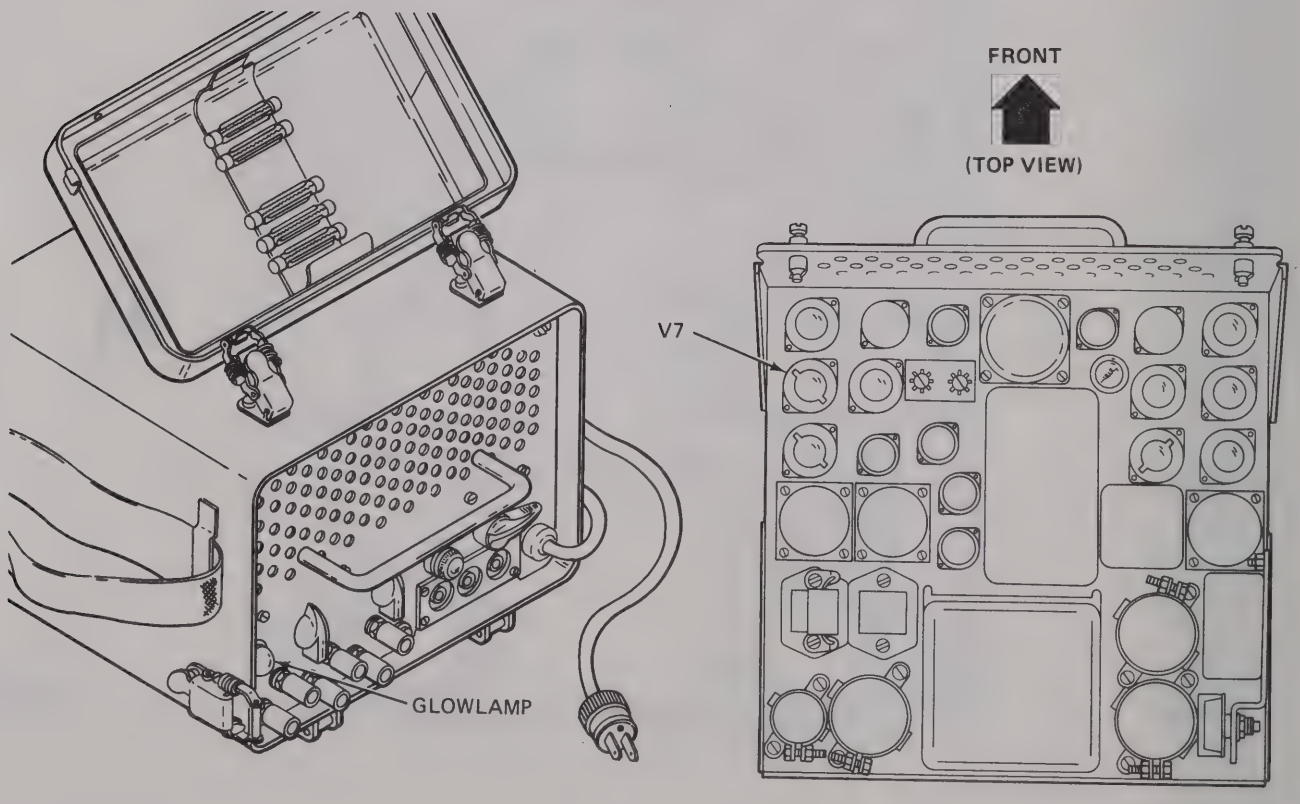
See paragraph 2-22 for electron tube test and replacement procedure.

Step 2. Check tube socket voltage and resistance at V7.

See paragraph 2-23 for voltage and resistance measurement procedure.

Step 3. Check neon glowlamp.

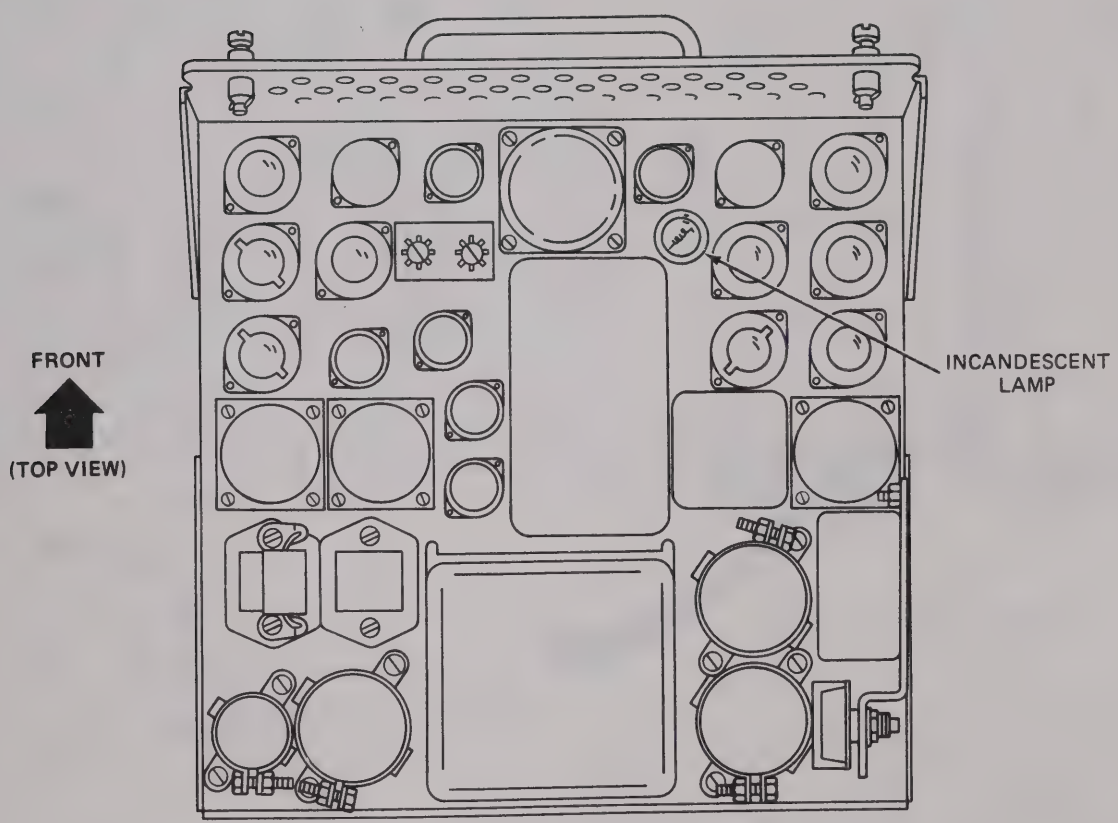
Replace neon glowlamp. See paragraph 2-16.



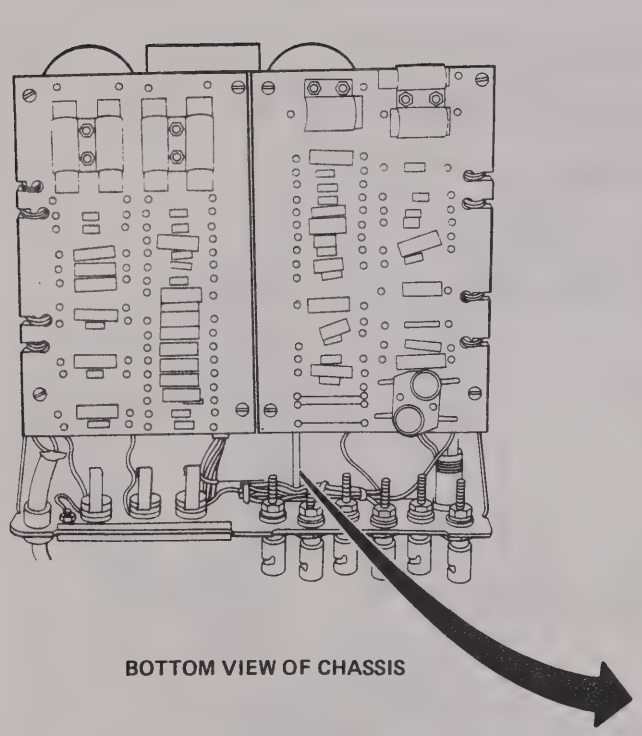
EL8PV036

TROUBLESHOOTING (CONT)

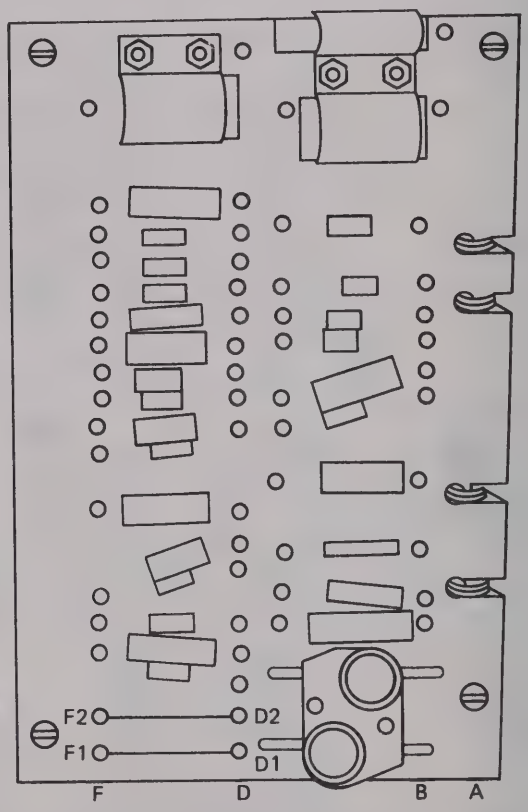
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
13. Unable to break transmission from distant terminal or signal LB switchboard using RING switch.	Check incandescent lamp.	Replace lamp. See paragraph 2-17 for procedure.



MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
14. Unable to signal CB switchboard using 4W-2W-TEL switch.	Check if strap is missing between terminals D1 and F1 on board A.	Replace strap between terminal D1 and F1. See paragraph 2-12.



BOTTOM VIEW OF CHASSIS



EL8PV038

Section V MAINTENANCE PROCEDURES

OVERVIEW

The procedures given in this section cover equipment containing electron tubes. The procedures are the same for equipment containing semiconductors. This section provides instructions for the removal, repair, and installation of equipment maintained at the organizational level.

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Cover Assembly Replacement	2-18	2-52
Control Knob Replacement	2-19	2-54
Power Cord Plug Replacement	2-20	2-56
Replacement of Electron Tube Shields	2-21	2-58
Electron Tube Replacement and Testing	2-22	2-60
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2-16. NEON GLOWLAMP REPLACEMENT.

This task covers:

1. Removal
2. Installation

INITIAL SETUP

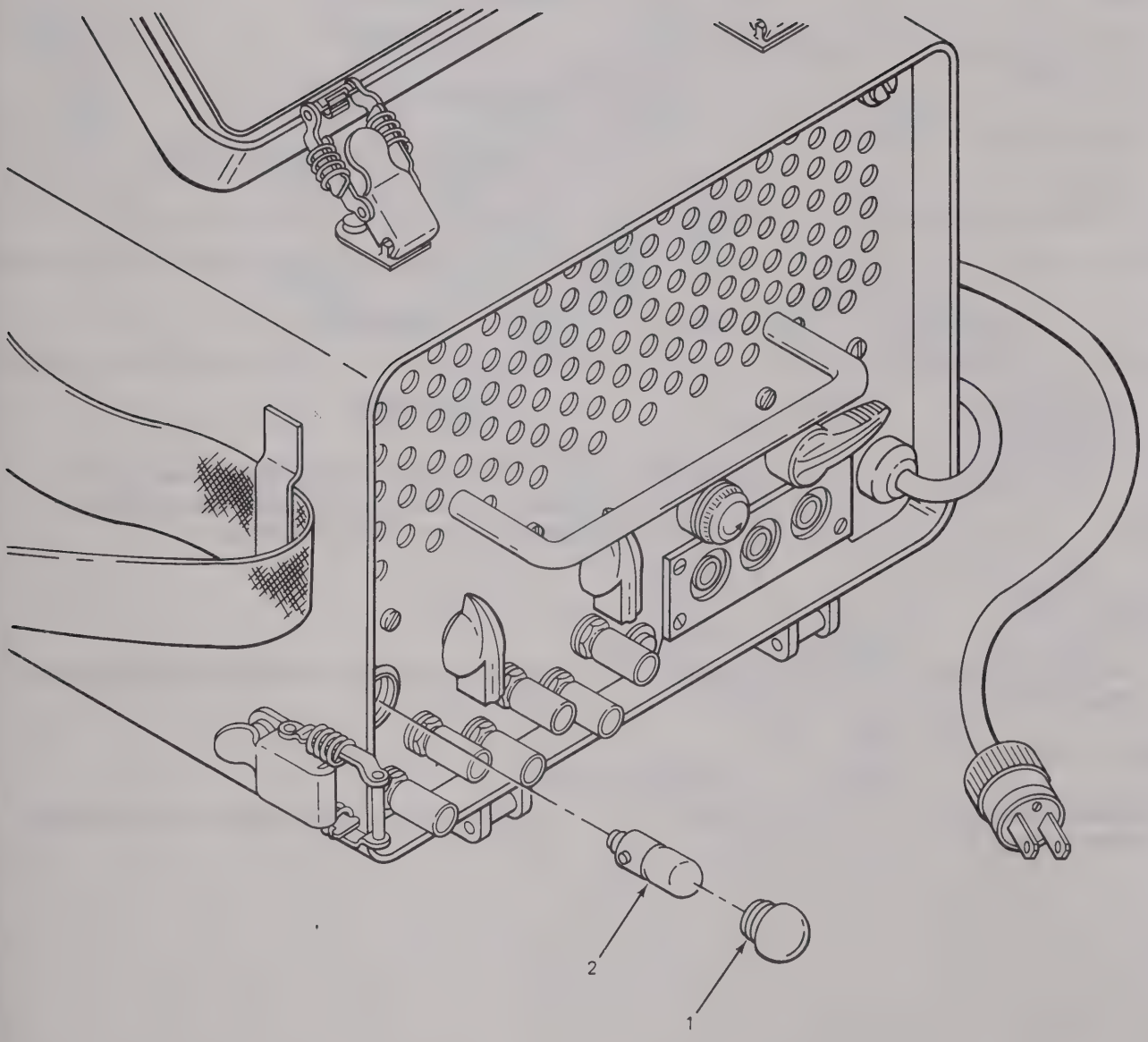
Tools	Personnel Required
None	One technician
Materials/Parts	**Equipment Condition**
Lamp, neon NSN 6240-00-233-9100	Equipment off

LOCATION	ITEM	ACTION **REMARKS**
REMOVAL		
1. Telegraph terminal control panel	Glowlamp lens (1)	Remove by turning counterclockwise.
2.	Glowlamp (2)	Push in and turn counterclockwise until lamp releases.
INSTALLATION		
1. Telegraph terminal control panel	Glowlamp (2)	Insert into base, push in and turn clockwise.
2.	Glowlamp lens (1)	Install by turning clockwise.

CAUTION

Over tightening lens will cause it to split.

2-16. NEON GLOWLAMP REPLACEMENT. (CONT)



EL8PV039

2-17. INCANDESCENT LAMP REPLACEMENT.

This task covers:

1. Removal
2. Installation

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment TK-100/G

Materials/Parts

Lamp
NSN 6240-00-155-8014

Personnel Required

One technician

Equipment Condition

Chassis assembly removed from transit case. See paragraph 2-10.

LOCATION	ITEM	ACTION / REMARKS

WARNING

Disconnect power cord from power source before working on equipment. When power is disconnected, some capacitors may still retain dangerous voltages. Always discharge capacitors.

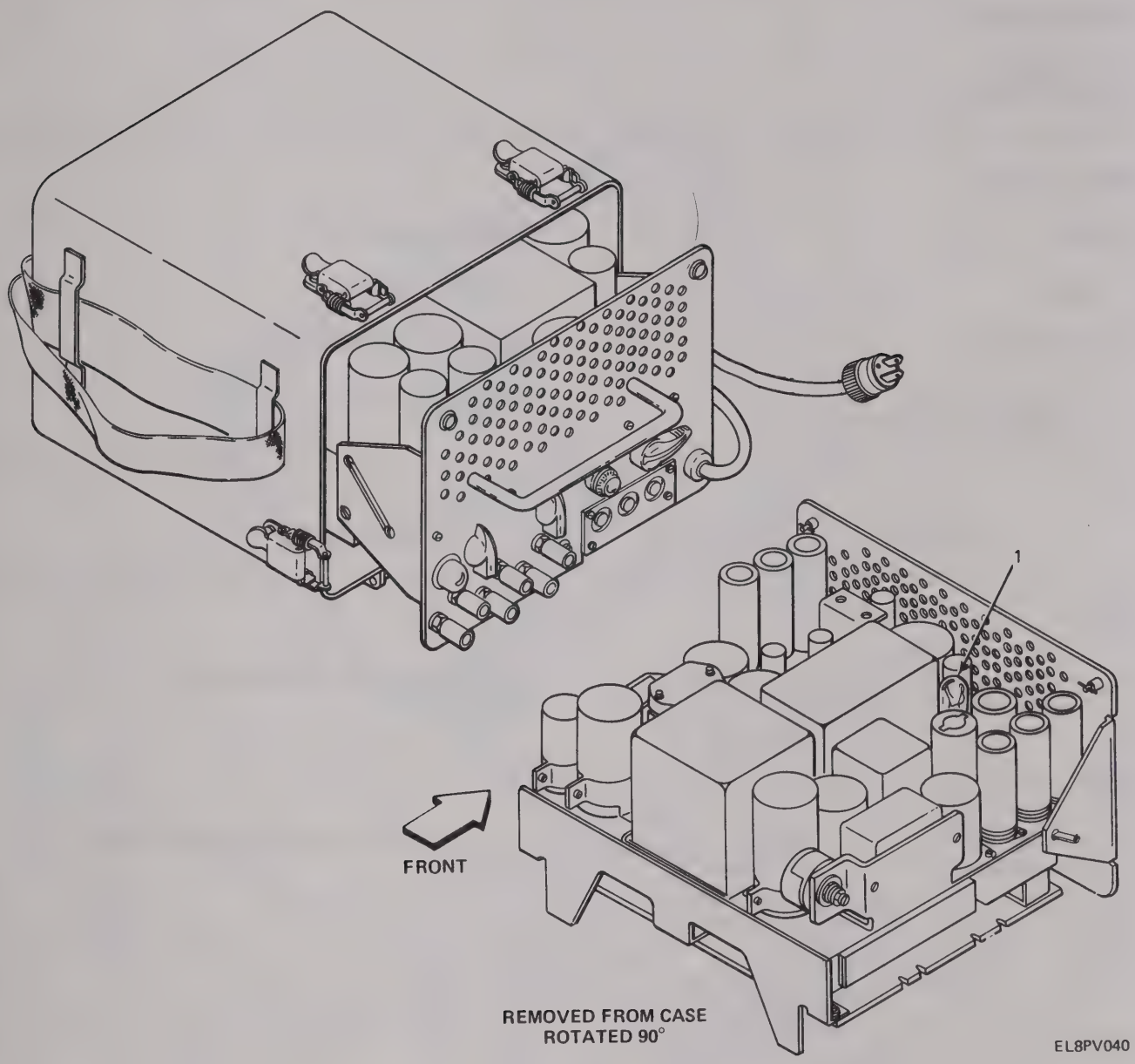
REMOVAL

Telegraph terminal chassis assembly	Incandescent lamp (1)	Push in and turn counterclockwise until lamp releases.

INSTALLATION

Telegraph terminal chassis assembly	Incandescent lamp (1)	Insert into lamp base, push in and turn clockwise.

2-17. INCANDESCENT LAMP REPLACEMENT. (CONT)



2-18. COVER ASSEMBLY REPLACEMENT.

This task covers:

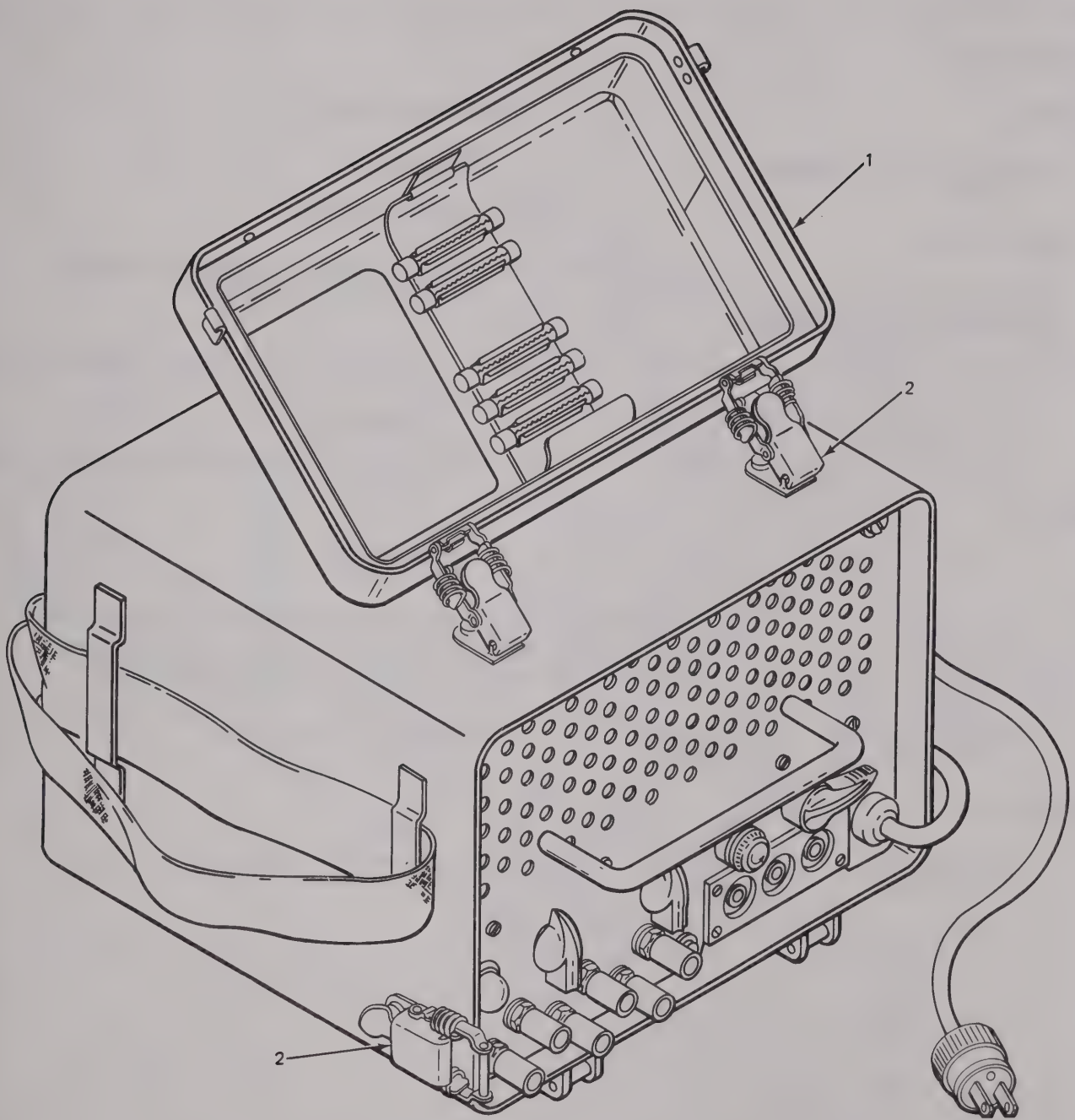
1. Removal
2. Installation

INITIAL SETUP

Tools	Personnel Required
None	One technician
Materials/Parts	**Equipment Condition**
Cover assembly NSN 5805-00-625-5418	Equipment on

LOCATION	ITEM	ACTION **REMARKS**
REMOVAL		
Telegraph terminal	Cover assembly (1) and spring fasteners (2)	Remove cover by releasing spring fasteners.
INSTALLATION		
Telegraph terminal	Spring fasteners (2) and cover assembly (1)	Attach cover assembly and close spring fastener.

2-18. COVER ASSEMBLY REPLACEMENT. (CONT)



EL8PV041

2-19. CONTROL KNOB REPLACEMENT.

This task covers:

1. Removal
2. Installation

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment TK-100/G

Materials/Parts

Knob, NSN 5355-00-644-2163
Knob, NSN 5355-00-160-6850

Personnel Required

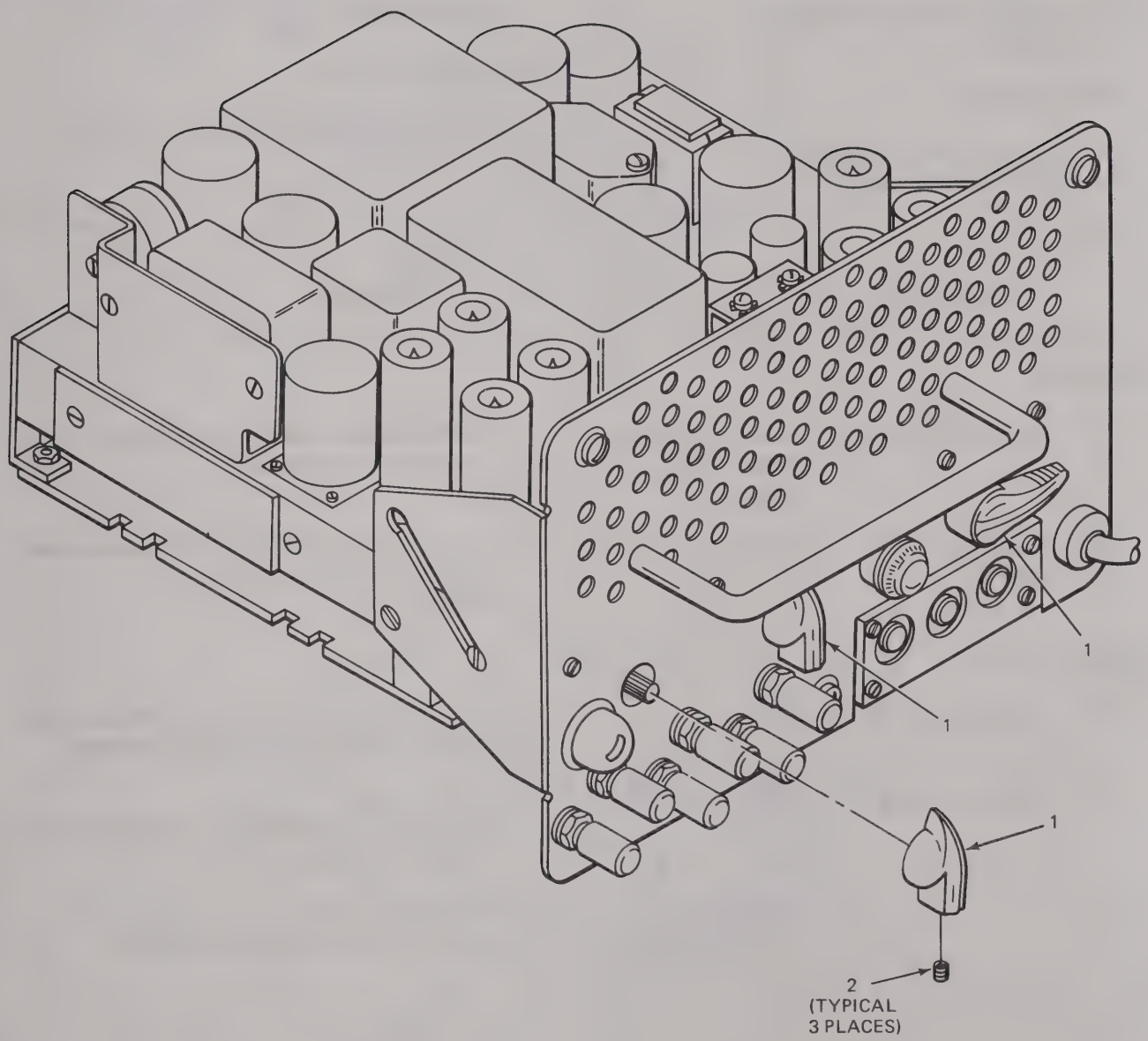
One technician

Equipment Condition

Chassis assembly removed from transit case. See paragraph 2-10.

LOCATION	ITEM	ACTION / REMARKS
REMOVAL		
		WARNING Disconnect power cord from power source before working on equipment. When power is disconnected, some capacitors may retain dangerous voltages. Always discharge capacitors.
Telegraph terminal control panel	Knobs (1) and set screw (2)	Using screwdriver, remove.
INSTALLATION		
Telegraph terminal control panel	Knob (1) and set screw (2)	Using screwdriver, install.

2-19. CONTROL KNOB REPLACEMENT. (CONT)



EL8PV042

2-20. POWER CORD PLUG REPLACEMENT.

This task covers:

1. Removal
2. Installation

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment
TK-100/G

Materials/Parts

Connector, plug electrical
NSN 5935-00-518-9653

Personnel Required

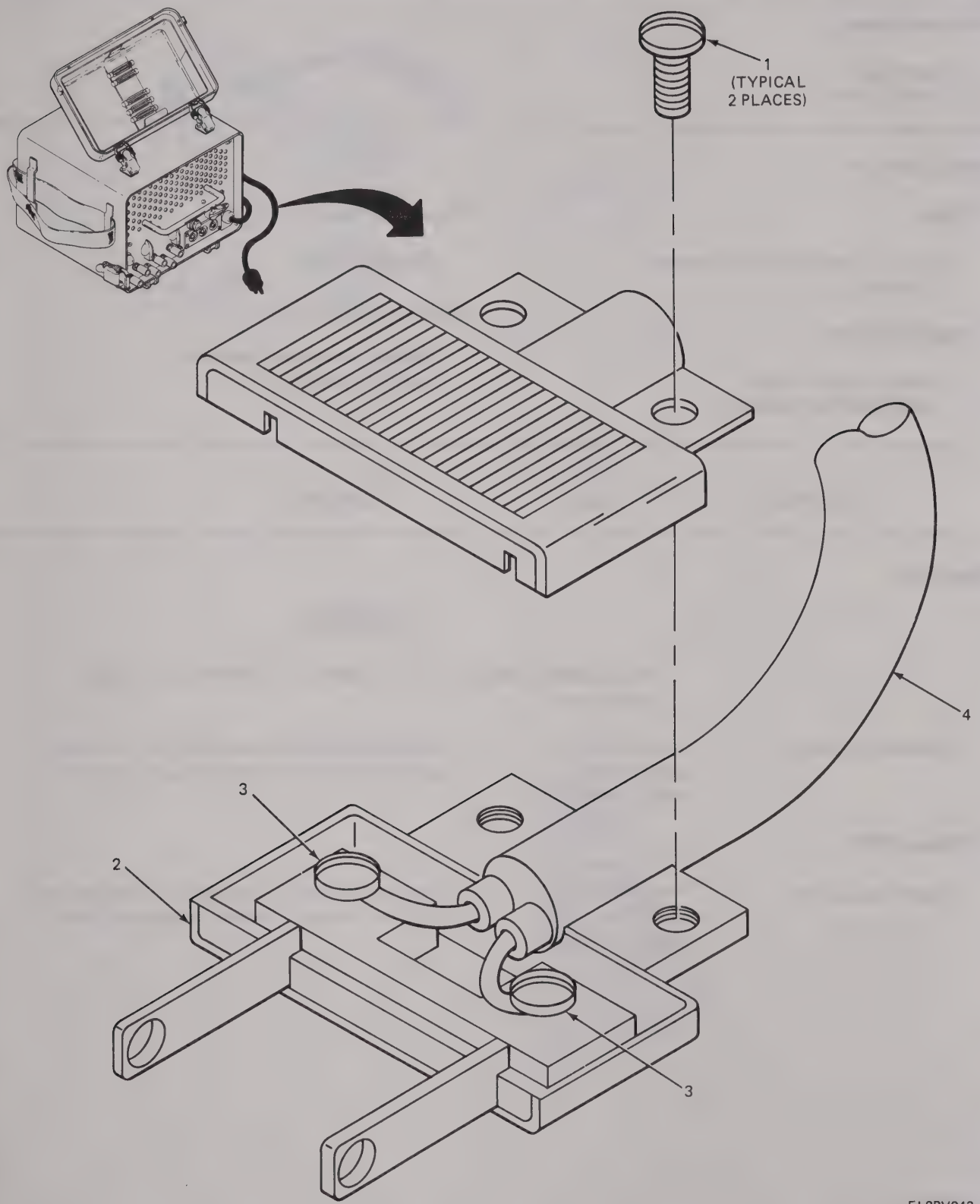
One technician

Equipment Condition

Power plug removed from power source.

LOCATION	ITEM	ACTION **REMARKS**
REMOVAL		
1. Telegraph terminal	Screws (1) and power cord plug (2)	a. Using flat-tip screwdriver, remove. b. Separate plug halves.
2. Power cord plug	Binding screws (3)	a. Using flat-tip screwdriver, loosen screws holding strands of wires. b. Remove plug.
INSTALLATION		
1. Telegraph terminal	Power cord (4)	Using wire stripper, strip ends of power cord and wrap wires around binding screws.
2. Power cord plug	Binding screws (3)	a. Install plug. b. Using flat-tip screwdriver, tighten screws holding strands of wires.
3.	Power cord plug (2) and screws (1)	a. Aline two halves. b. Using flat-tip screwdriver, install.

2-20. POWER CORD PLUG REPLACEMENT. (CONT)



2-21. REPLACEMENT OF ELECTRON TUBE SHIELDS.

This task covers:

1. Removal
2. Installation

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment
TK-100/G

Materials/Parts

Shield, electron tube
NSN 5960-00-264-3004

Personnel Required

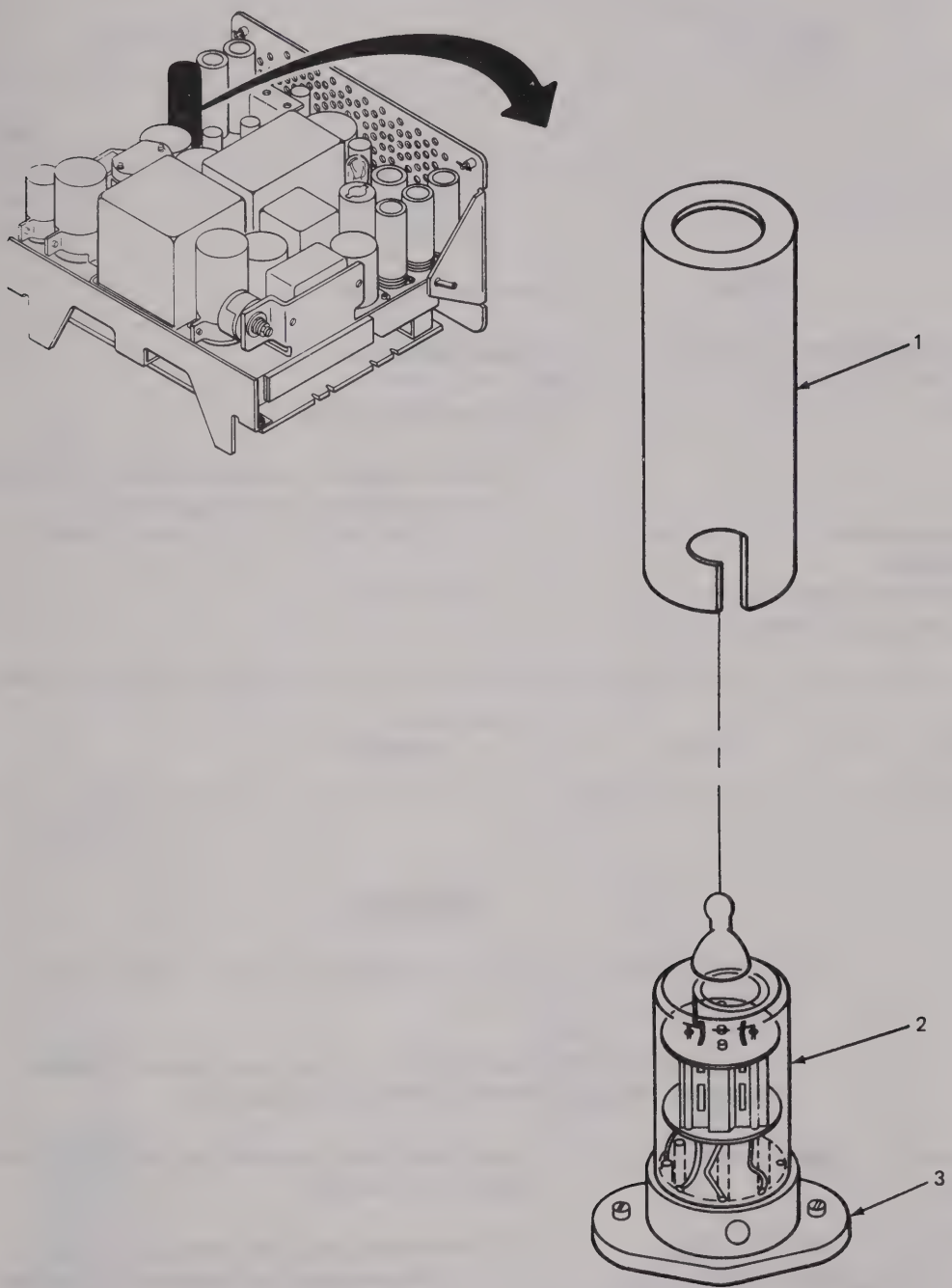
One technician

Equipment Condition

Chassis assembly removed.
See paragraph 2-10.

LOCATION	ITEM	ACTION REMARKS
REMOVAL		
		WARNING Tube shields are hot! Do not attempt to remove with fingers until cool.
Chassis assembly	Tube shield (1), tube (2) and tube socket (3)	Press tube shield down and turn it counter-clockwise until it is free of tube socket.
INSTALLATION		
Chassis assembly	Tube shield (1), tube (2) and tube socket (3)	Press tube shield down and turn clockwise until it is properly seated in tube socket.

2-21. REPLACEMENT OF ELECTRON TUBE SHIELDS. (CONT)



EL8PV044

2-22. ELECTRON TUBE REPLACEMENT AND TESTING.

This task covers:

1. Removal
2. Testing
3. Installation

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment TK-100/G
Tube Tester TV-7/U

Materials/Parts

Electron Tubes V1 and V7 NSN 5960-00-166-7664
Electron Tubes V2, V5, V8, V9, V10, V11, and V12 (NSN 5960-00-166-7663)

Personnel Required

One technician

Equipment Condition

Chassis assembly removed from transist case. See paragraph 2-10.

LOCATION	ITEM	ACTION **REMARKS**

REMOVAL

WARNING

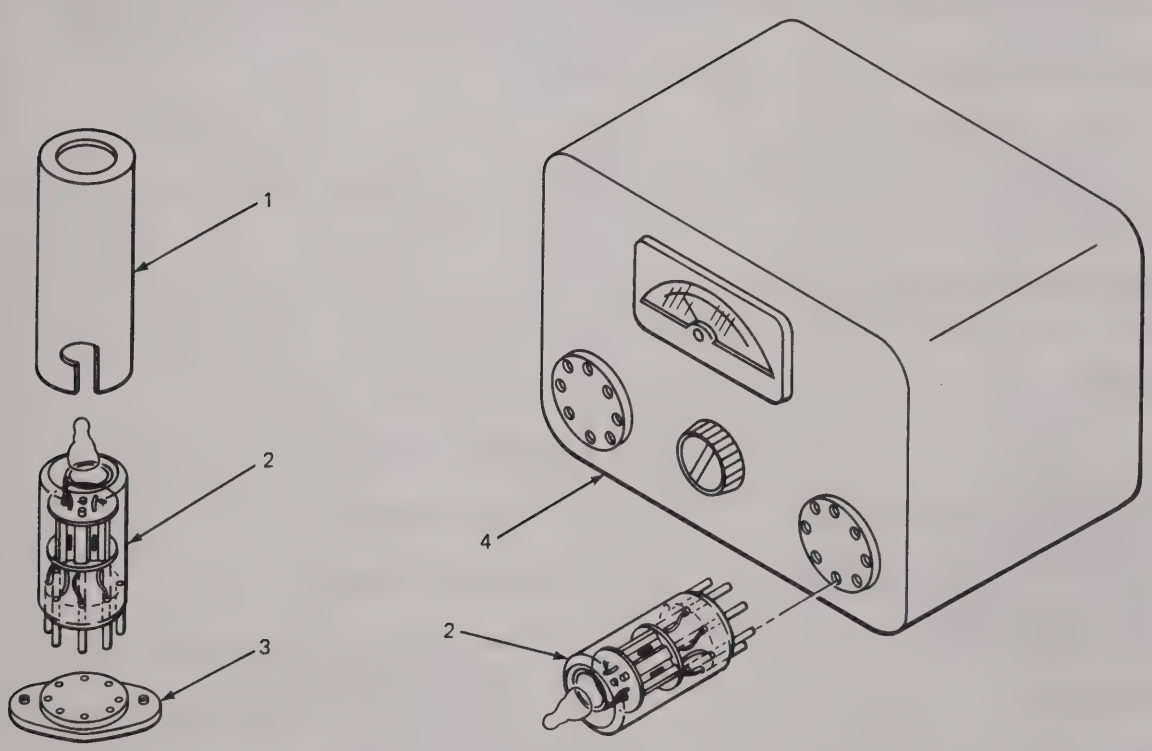
Tube shields are hot! Do not attempt to remove with fingers until cool.

When power is disconnected some capacitors may still retain dangerous voltages. Always discharge capacitors.

1.	Telegraph terminal chassis assembly	Tube shield (1)	Press down, turn counterclockwise and remove shield from socket.
2.		Tube (2) and socket (3)	Pull tube straight out of socket. **Remove and test one tube at a time.**

2-22. ELECTRON TUBE REPLACEMENT AND TESTING. (CONT)

LOCATION	ITEM	ACTION REMARKS
TESTING		
Tube Tester	Tube (2) and tube tester (4)	Insert tube into tester. Perform test.
		NOTE Tube testers may vary according to model number. Do not throw away tube that tests slightly below or above its test limit.
INSTALLATION		
1. Chassis assembly	Tube (2)	Aline pins and press firmly into tube socket.
2.	Tube shield (1)	Press tube shield down into tube socket and turn clockwise.



EL8PV045

2-23. VOLTAGE AND RESISTANCE MEASUREMENTS.

When preforming voltage and resistance measurements the following conditions are the same throughout the procedure unless otherwise specified:

All dc voltages are measured to ground using a multimeter.

Measurement procedures are the same for tubes and semiconductors.

4W-2W-TEL switch in 2W position.

If incorrect measurements are obtained at a tube socket containing a tube, test tube. If tube is bad, replace and perform measurements again. If problem continues, refer to a higher level of maintenance.

If incorrect measurements are obtained at the tube socket containing a semiconductor, replace semiconductor and perform measurements again. If problem continues, refer to a higher level of maintenance.

For space condition with NORM-REC-SEND switch in SEND position, insert two dummy plugs in SEND jacks on TH-5/TG front panel. For mark condition, remove two dummy plugs from SEND jacks.

For space condition with NORM-REC-SEND switch in REC position, insert one dummy plug in REC jack on TH-5/TG front panel. For mark condition, remove dummy plug from REC jack.

Tube sockets are viewed from top of chassis assmebly.

NC means no connection at that pin.

This task covers:

Voltage and resistance measurements

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment TK-100/G
Tube Socket Adapter MX-1258/U
Multimeter AN/URM-105
Dummy Plug PG-055B

Materials/Parts

None

Personnel Required

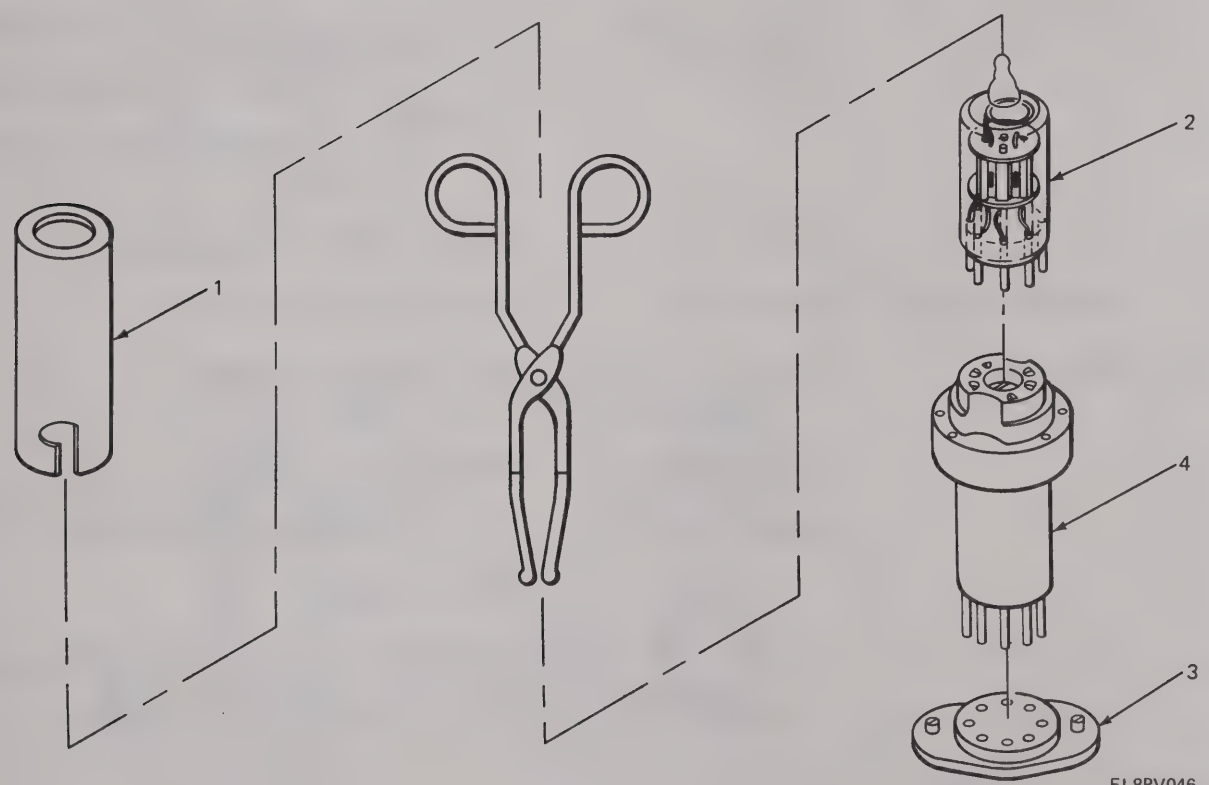
One technician

Equipment Condition

Chassis assembly removed from transit case. See paragraph 2-10.
Equipment off for resistance measurement.
Equipment on for voltage measurement.

2-23. VOLTAGE AND RESISTANCE MEASUREMENTS. (CONT)

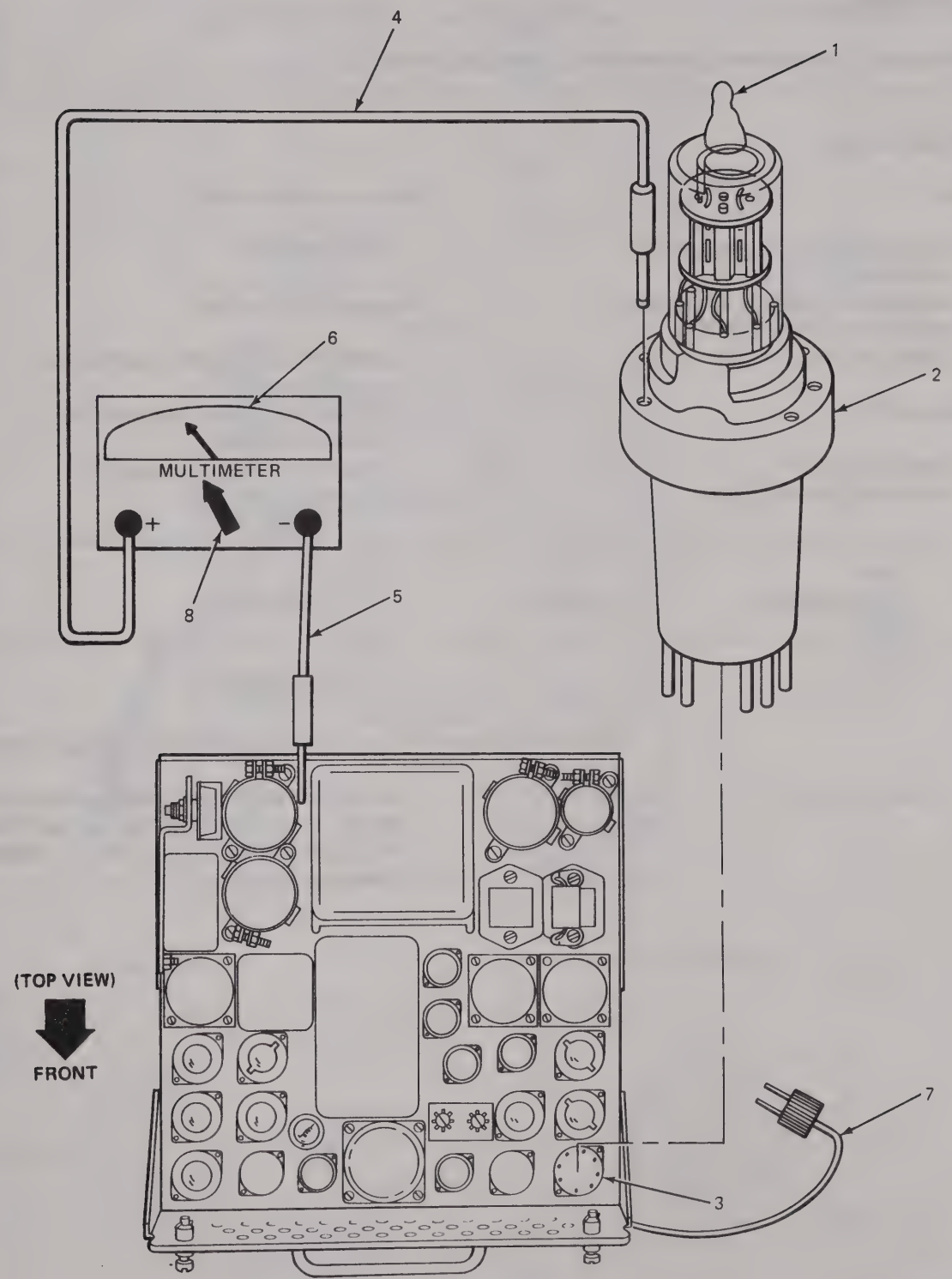
LOCATION	ITEM	ACTION **REMARKS**
VOLTAGE AND RESISTANCE MEASUREMENTS		
1. Telegraph terminal chassis assembly	Tube shield (1)	Remove. See paragraph 2-21.
2.	Tube (2) and tube socket (3)	Using tube puller or fingers, remove from socket.
3. Tube pins	Tube socket adapater (4)	Install on tube pins.



2-23. VOLTAGE AND RESISTANCE MEASUREMENTS. (CONT)

LOCATION	ITEM	ACTION **REMARKS**
VOLTAGE AND RESISTANCE MEASUREMENTS (CONT)		
4. Telegraph terminal chassis assembly	Tube (1), Tube socket adapter (2) and tube socket (3)	Insert into tube socket.
		NOTE Terminal number on tube socket adapter is the same as the pin number on the tube.
5. Multimeter	Positive lead (4) and negaitve leads (5)	a. Connect the positive lead to the terminal on tube socket adapter. b. Connect the negative lead to the chassis assembly. **Make sure that the area is clean and not painted.**
6.	Dial (6)	Observe voltage readings of pins.
7. Telegraph terminal	Power cord (7)	Remove from power source.
8. Multimeter	Function switch (8)	Set to highest ohm value.
9.	Positive lead (4) and negative lead (5)	Repeat steps 5 and 6. **Adjust function switch to obtain reading at midscale position.**
		NOTE When measurements are obtained, compare with readings given in paragraphs 2-24 to 2-38. Tubes and semiconductor measurements are listed by tube number 1 through 15.

2-23. VOLTAGE AND RESISTANCE MEASUREMENTS. (CONT)



EL8PV047

2-24. VOLTAGE AND RESISTANCE MEASUREMENTS OF ELECTRON TUBE V1.

This task covers:

Voltage and resistance measurements of electron tube V10

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment TK-100/G
Tube Socket Adapter MX-1258/U
Multimeter AN/URM-105
Telephone Plug PJ-055B (2)

Materials/Parts

Electron tube V1
NSN 5960-00-166-7664

Personnel Required

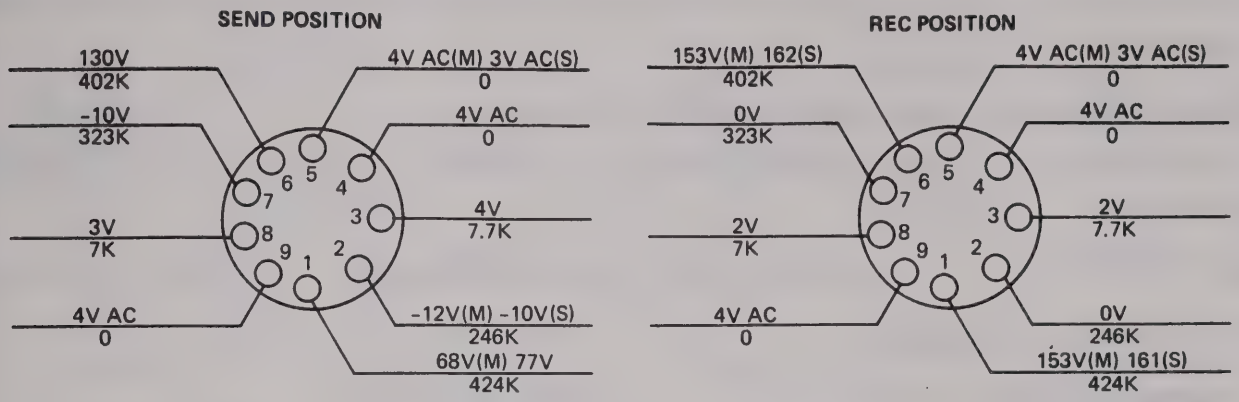
One technician

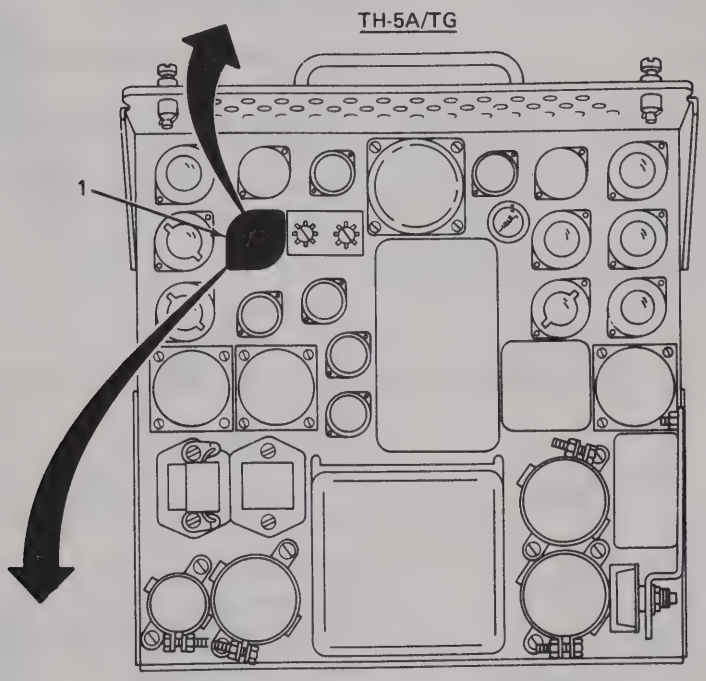
Equipment Condition

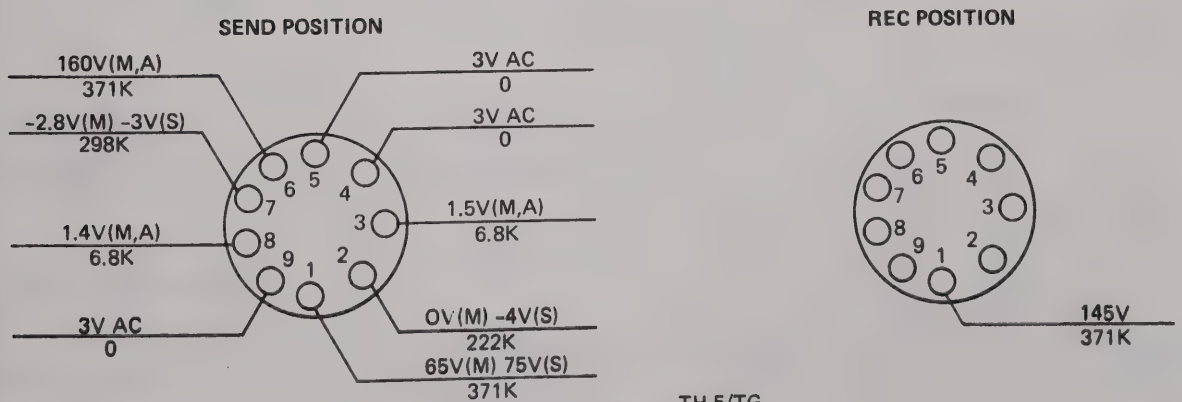
(A) NORM-REC-SEND switch in REC position.
(M) Remove telephone plug for mark condition.
(S) Insert telephone plug for space condition.

LOCATION	ITEM	ACTION REMARKS
		CAUTION Disconnect power before making resistance measurements.
Tube socket V1	Tube V1 (1)	Using multimeter and tube socket adapter, test for resistance and voltage with NORM-REC-SEND switch set to REC or SEND. See paragraph 2-23.

2-24. VOLTAGE AND RESISTANCE MEASUREMENTS OF ELECTRON TUBE V1. (CONT)







TH-5/TG
V1

EL8PV048

2-25. VOLTAGE AND RESISTANCE MEASUREMENTS OF ELECTRON TUBE V2.

This task covers:

Voltage and resistance measurements of electron tube V2

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment TK-100/G
Tube Socket Adapter MX-1258/U
Multimeter AN/URM-105
Telephone Plug PJ-055B (2)

Materials/Parts

Electron tube V2
NSN 5960-00-166-7663

Personnel Required

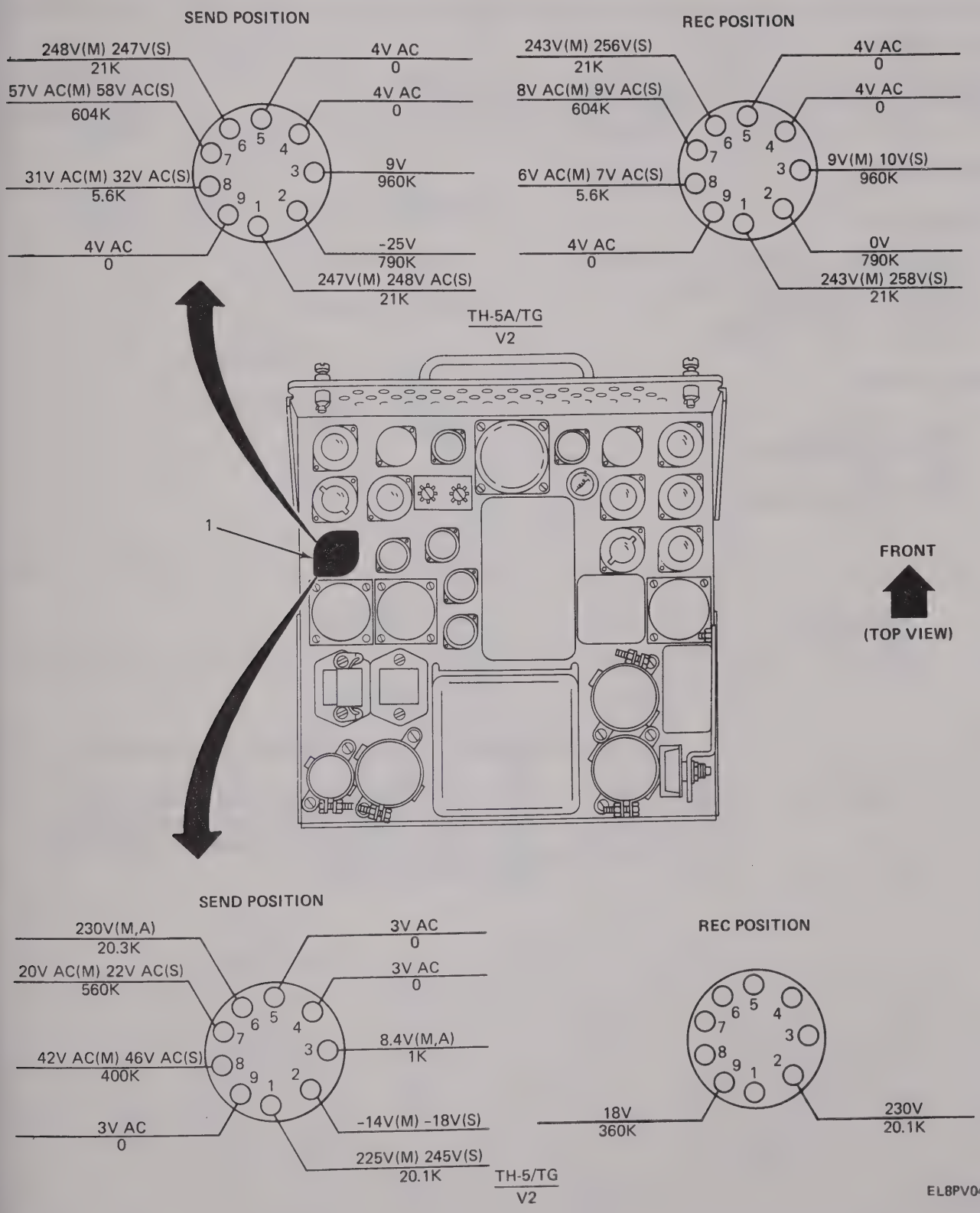
One technicain

Equipment Condition

(A) NORM-REC-SEND switch in REC position.
(M) Remove telephone plug for mark condition.
(S) Insert telephone plug for space condition.

LOCATION	ITEM	ACTION REMARKS
		CAUTION Disconnect power before making resistance measurements.
Tube socket V2	Tube V2 (1)	Using multimeter and tube socket adapter, test for resistance and voltage with NORM-REC-SEND switch set to REC or SEND. See paragraph 2-23.

2-25. VOLTAGE AND RESISTANCE MEASUREMENTS OF ELECTRON TUBE V2. (CONT)



2-26. VOLTAGE AND RESISTANCE MEASUREMENTS OF ELECTRON TUBE V3.

This task covers:

Voltage and resistance measurements of electron tube V3

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment TK-100/G
Tube Socket Adapter MX-1258/U
Multimeter AN/URM-105
Telephone Plug PJ-055B (2)

Materials/Parts

Electron Tube V3
NSN 5960-00-188-3544
Semiconductor
NSN 5961-00-076-3545

Personnel Required

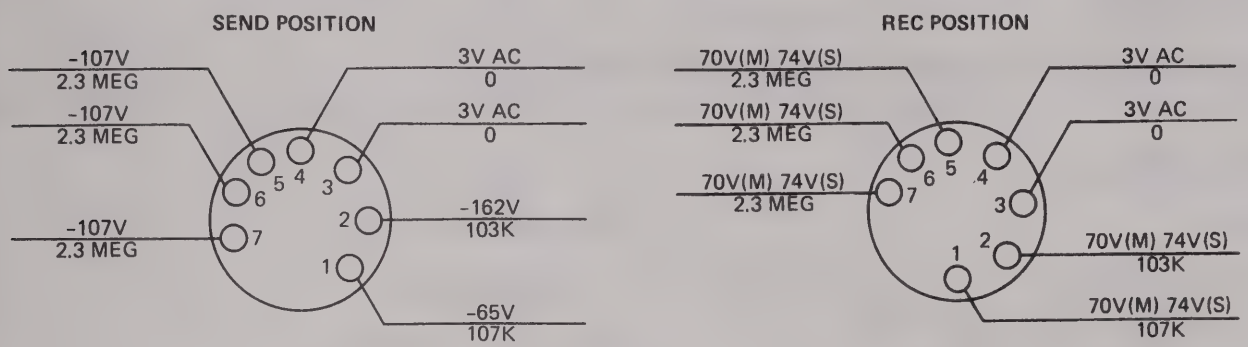
One technician

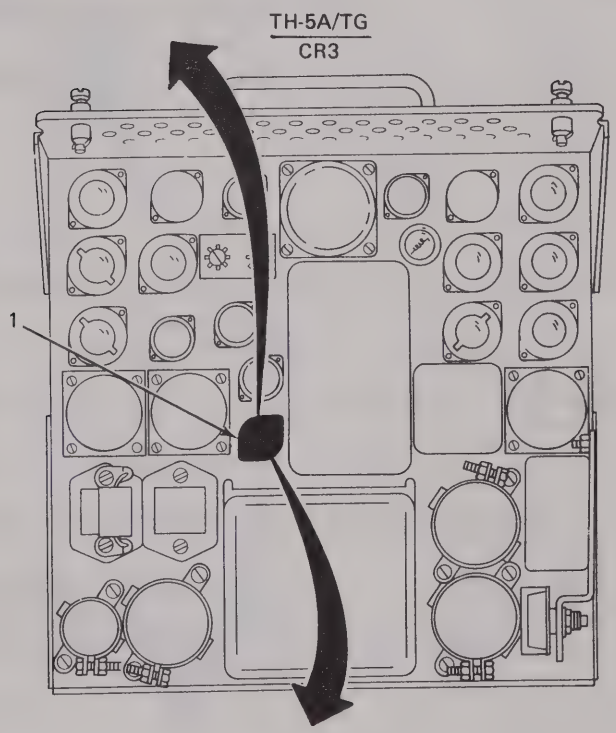
Equipment Condition

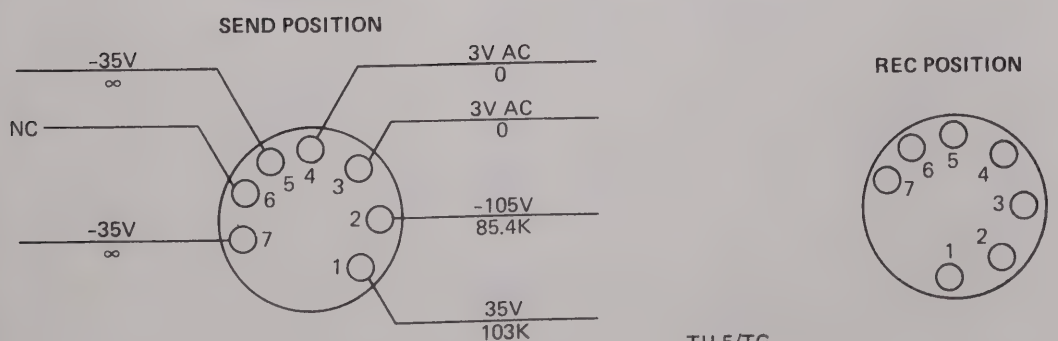
(M) Remove telephone plug for mark condition
(S) Insert telephone plug for space condition

LOCATION	ITEM	ACTION **REMARKS**
		CAUTION Disconnect power before making resistance measurements.
Tube socket V3	Tube V3 (1)	Using multimeter and tube socket adapter, test for resistance and voltage with NORM-REC-SEND switch set to REC or SEND. See paragraph 2-23.

2-26. VOLTAGE AND RESISTANCE MEASUREMENTS OF ELECTRON TUBE V3. (CONT)







TH-5/TG
V3

EL8PV050

2-27. VOLTAGE AND RESISTANCE MEASUREMENTS OF ELECTRON TUBE V4.

This task covers:

Voltage and resistance measurements of electron tube V4

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment TK-100/G
Tube Socket Adapter MX-1258/U
Multimeter AN/URM-105
Telephone Plug PJ-055B (2)

Materials/Parts

Electron tube V4
NSN 5960-00-188-3544
Semiconductor
NSN 5961-00-076-3545

Personnel Required

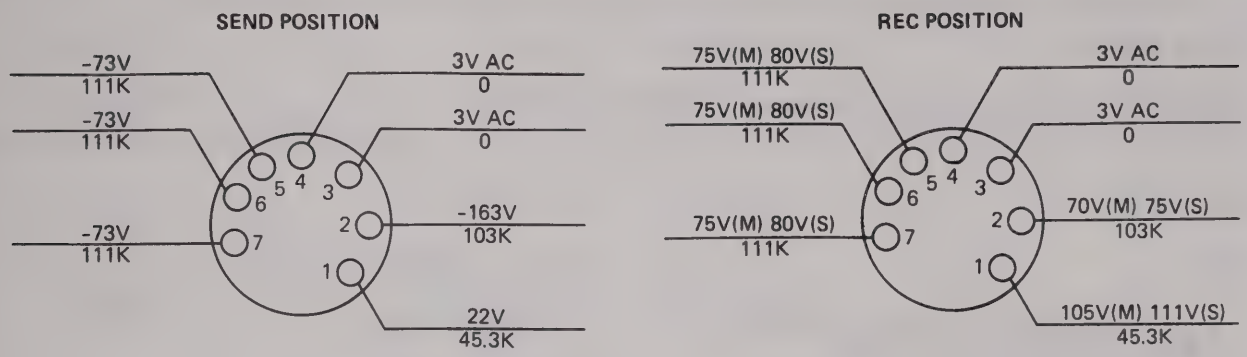
One technician

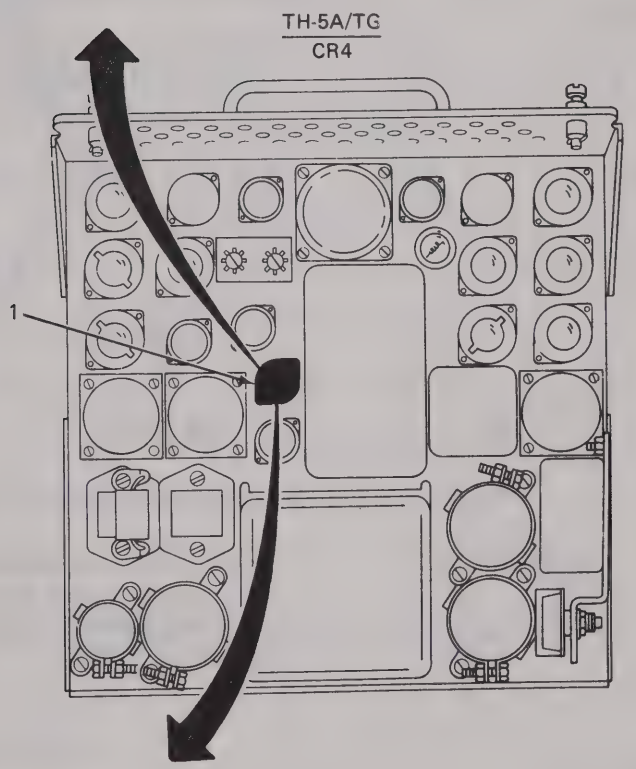
Equipment Condition

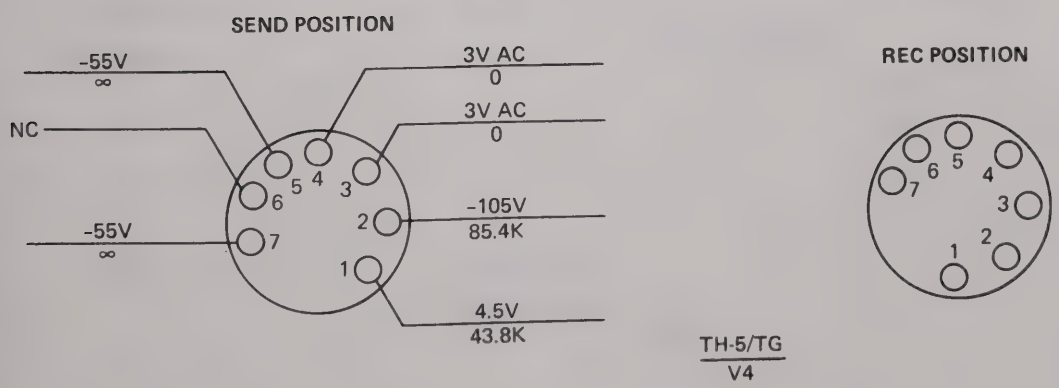
(M) Remove telephone plug for mark condition
(S) Insert telephone plug for space condition

LOCATION	ITEM	ACTION REMARKS
		CAUTION Disconnect power before making resistance measurements.
Tube socket V4	Tube V4 (1)	Using multimeter and tube socket adapter, test for resistance and voltage with NORM-REC-SEND switch set to REC or SEND. See paragraph 2-23.

2-27. VOLTAGE AND RESISTANCE MEASUREMENTS OF ELECTRON TUBE V4. (CONT)







EL8PV051

2-28. VOLTAGE AND RESISTANCE MEASUREMENTS OF ELECTRON TUBE V5.

This task covers:

Voltage and resistance measurements of electron tube V5

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment TK-100/G
Tube Socket Adapter MX-1258/U
Multimeter AN/URM-105
Telephone Plug PJ-055B (2)

Materials/Parts

Electron tube V5
NSN 5960-00-166-7663

Personnel Required

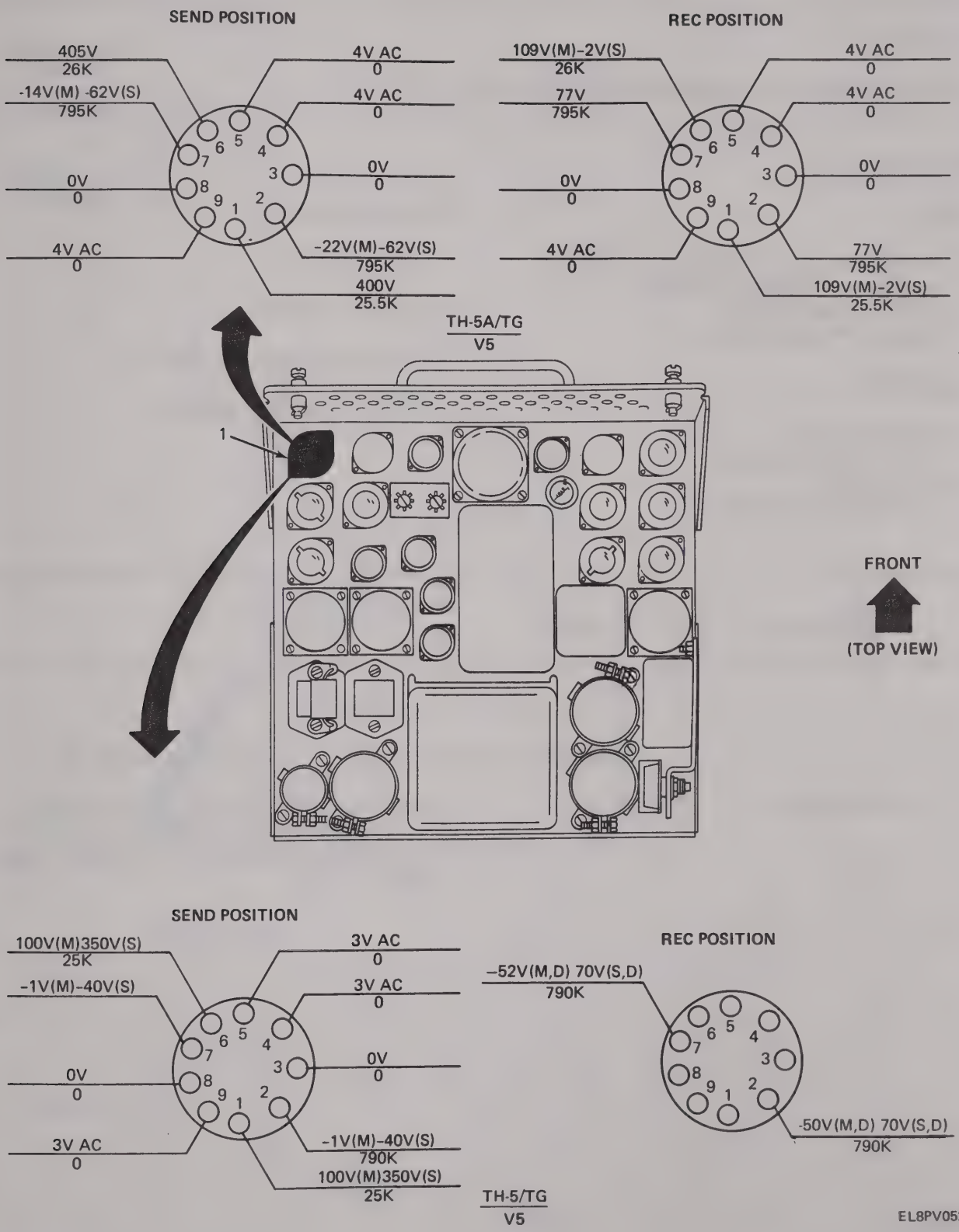
One technician

Equipment Condition

(D) Remove V5 from socket, turn power on 10 minutes before measurements
(M) Remove telephone plug for mark condition
(S) Insert telephone plug for space condition

LOCATION	ITEM	ACTION REMARKS
		CAUTION Disconnect power before making resistance measurements.
Tube socket V5	Tube V5 (1)	Using multimeter and tube socket adapter, test for resistance and voltage with NORM-REC-SEND switch set to REC or SEND. See paragraph 2-23.

2-28. VOLTAGE AND RESISTANCE MEASUREMENTS OF ELECTRON TUBE V5. (CONT)



2-29. VOLTAGE AND RESISTANCE MEASUREMENTS OF ELECTRON TUBE V6.

This task covers:

Voltage and resistance measurements of electron tube V6

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment TK-100/G
Tube Socket Adapter MX-1258/U
Multimeter AN/URM-105
Telephone Plug PJ-055B (2)

Materials/Parts

Electron tube V6
NSN 5960-00-188-3544
Semiconductor
NSN 5961-00-076-3545

Personnel Required

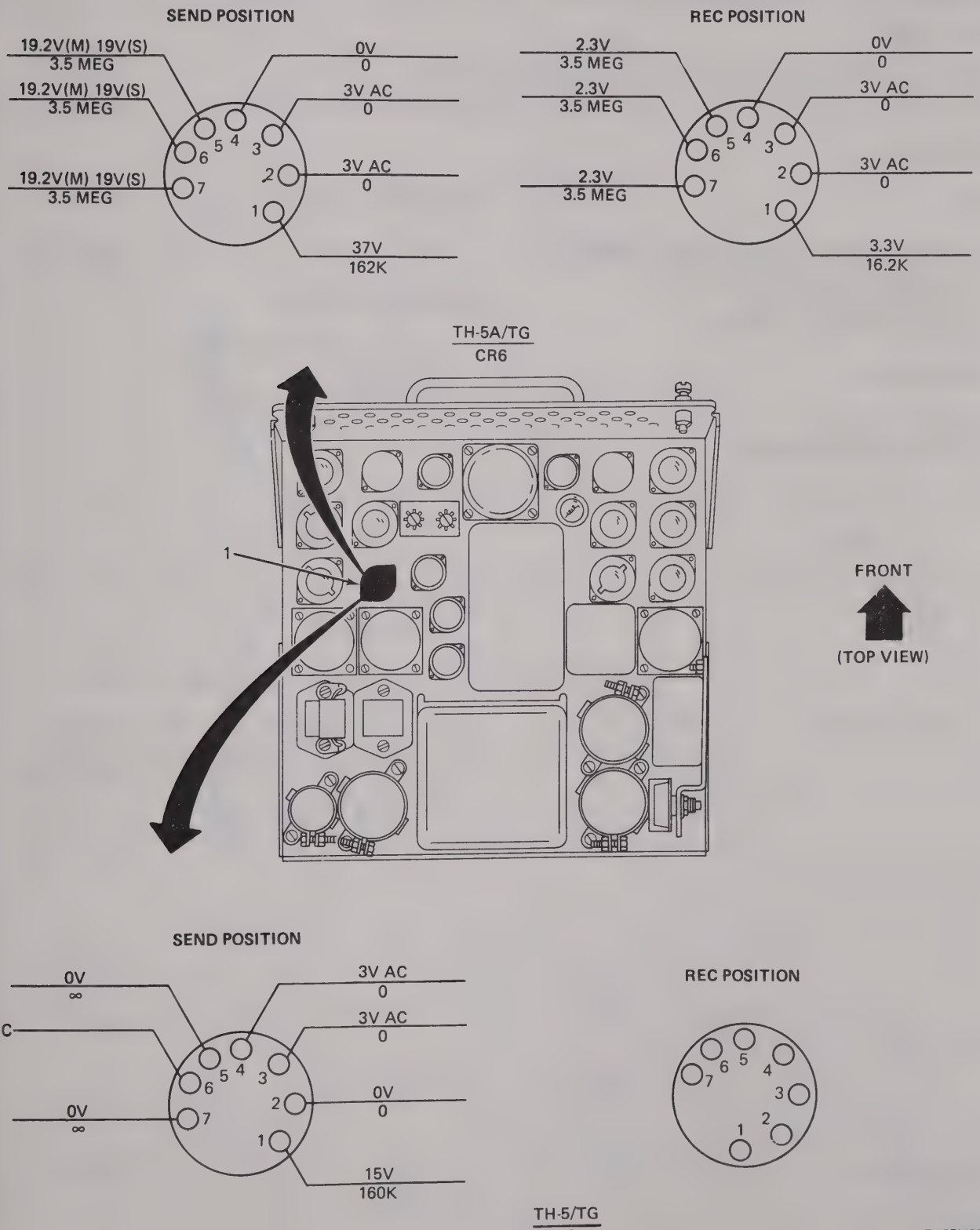
One technician

Equipment Condition

(M) Remove telephone plug for mark condition
(S) Insert telephone plug for space condition

LOCATION	ITEM	ACTION REMARKS
		CAUTION Disconnect power before making resistance measurements.
Tube socket V6	Tube V6 (1)	Using multimeter and tube socket adapter, test for resistance and voltage with NORM-REC-SEND switch set to REC or SEND. See paragraph 2-23.

2-29. VOLTAGE AND RESISTANCE MEASUREMENTS OF ELECTRON TUBE V6. (CONT)



2-30. VOLTAGE AND RESISTANCE MEASUREMENTS OF ELECTRON TUBE V7.

This task covers:

Voltage and resistance measurements of electron tube V7

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment TK-100/G
Tube Socket Adapter MX-1258/U
Multimeter AN/URM-105
Telephone Plug PJ-055B (2)

Materials/Parts

Electron tube V7
NSN 5960-00-166-7664

Personnel Required

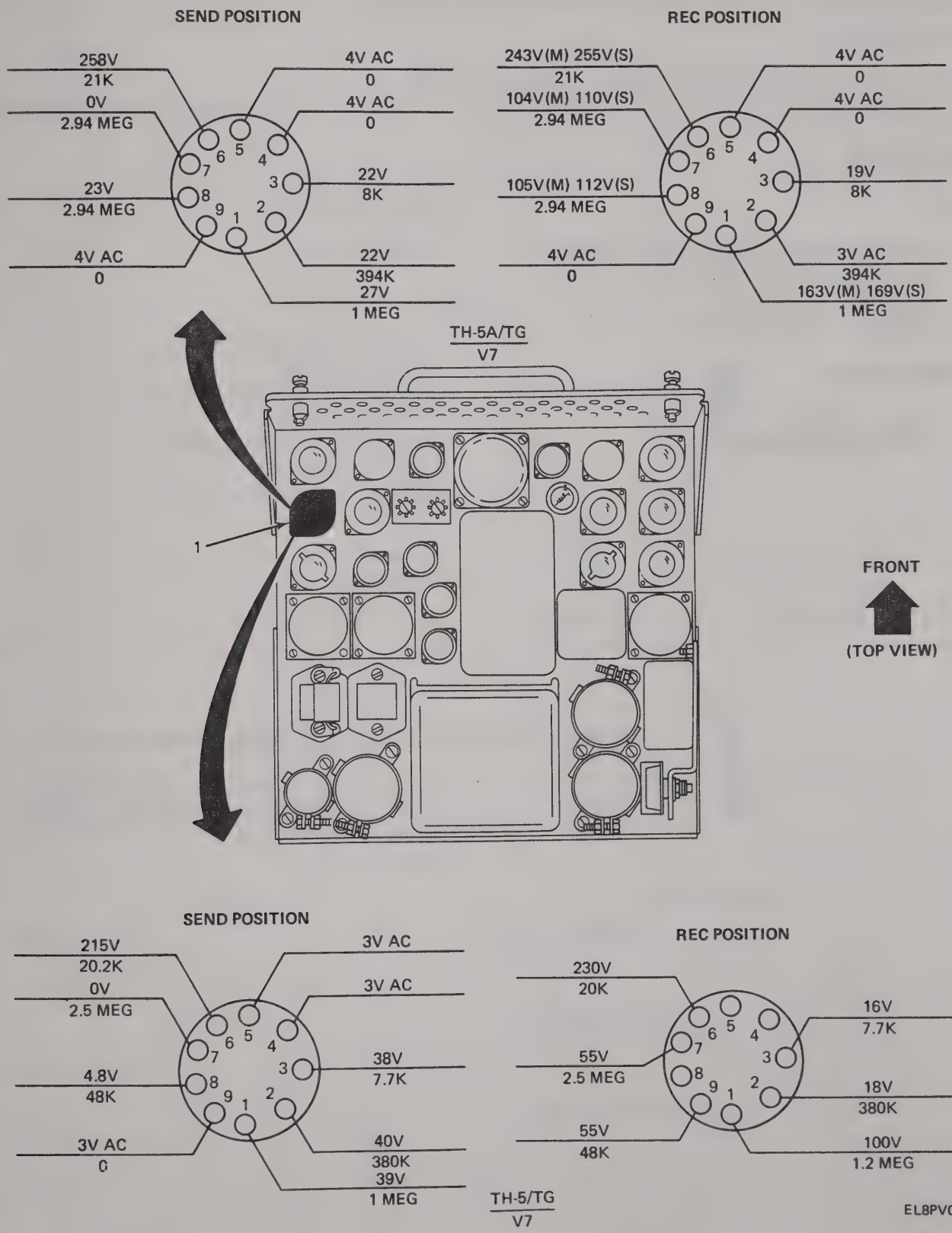
One technician

Equipment Condition

(M) Remove telephone plug for mark condition
(S) Insert telephone plug for space condition

LOCATION	ITEM	ACTION **REMARKS**
		CAUTION Disconnect power before making resistance measurements.
Tube socket V7	Tube V7 (1)	Using multimeter and tube socket adapter, test for resistance and voltage with NORM-REC-SEND switch set to REC or SEND. See paragraph 2-23.

2-30. VOLTAGE AND RESISTANCE MEASUREMENTS OF ELECTRON TUBE V7. (CONT)



2-31. VOLTAGE AND RESISTANCE MEASUREMENTS OF ELECTRON TUBE V8.

This task covers:

Voltage and resistance measurements of electron tube V8

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment TK-100/G
Tube Socket Adapter MX-1258/U
Multimeter AN/URM-105
Telephone Plug PJ-055B (2)

Materials/Parts

Electron tube V8
NSN 5960-00-166-7663

Personnel Required

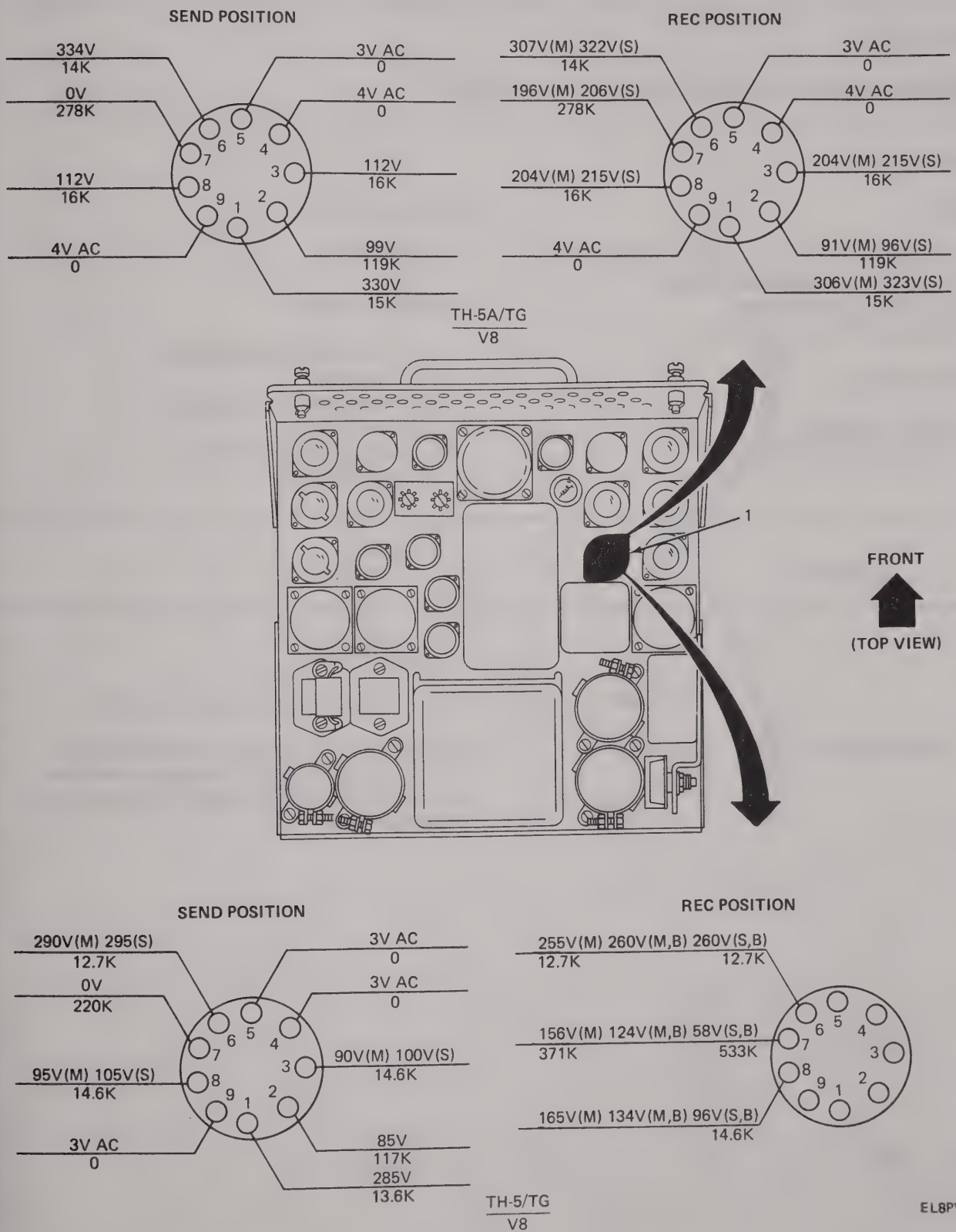
One technician

Equipment Condition

(A) NORM-REC-SEND switch in REC position
(B) NORM-REC-SEND switch in NORM position
(M) Remove telephone plug for mark condition
(S) Insert telephone plug for space condition

LOCATION	ITEM	ACTION REMARKS
		CAUTION Disconnect power before making resistance measurements.
Tube socket V8	Tube V8 (1)	Using multimeter and tube socket adapter, test for resistance and voltage with NORM-REC-SEND switch set to REC or SEND. See paragraph 2-23.

2-31. VOLTAGE AND RESISTANCE MEASUREMENTS OF ELECTRON TUBE V8. (CONT).



2-32. VOLTAGE AND RESISTANCE MEASUREMENTS OF ELECTRON TUBE V9.

This task covers:

Voltage and resistance measurements of electron tube V9

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment TK-100/G
Tube Socket Adapter MX-1258/U
Multimeter AN/URM-105
Telephone Plug PJ-055B (2)

Materials/Parts

Electron tube V9
NSN 5960-00-166-7663

Personnel Required

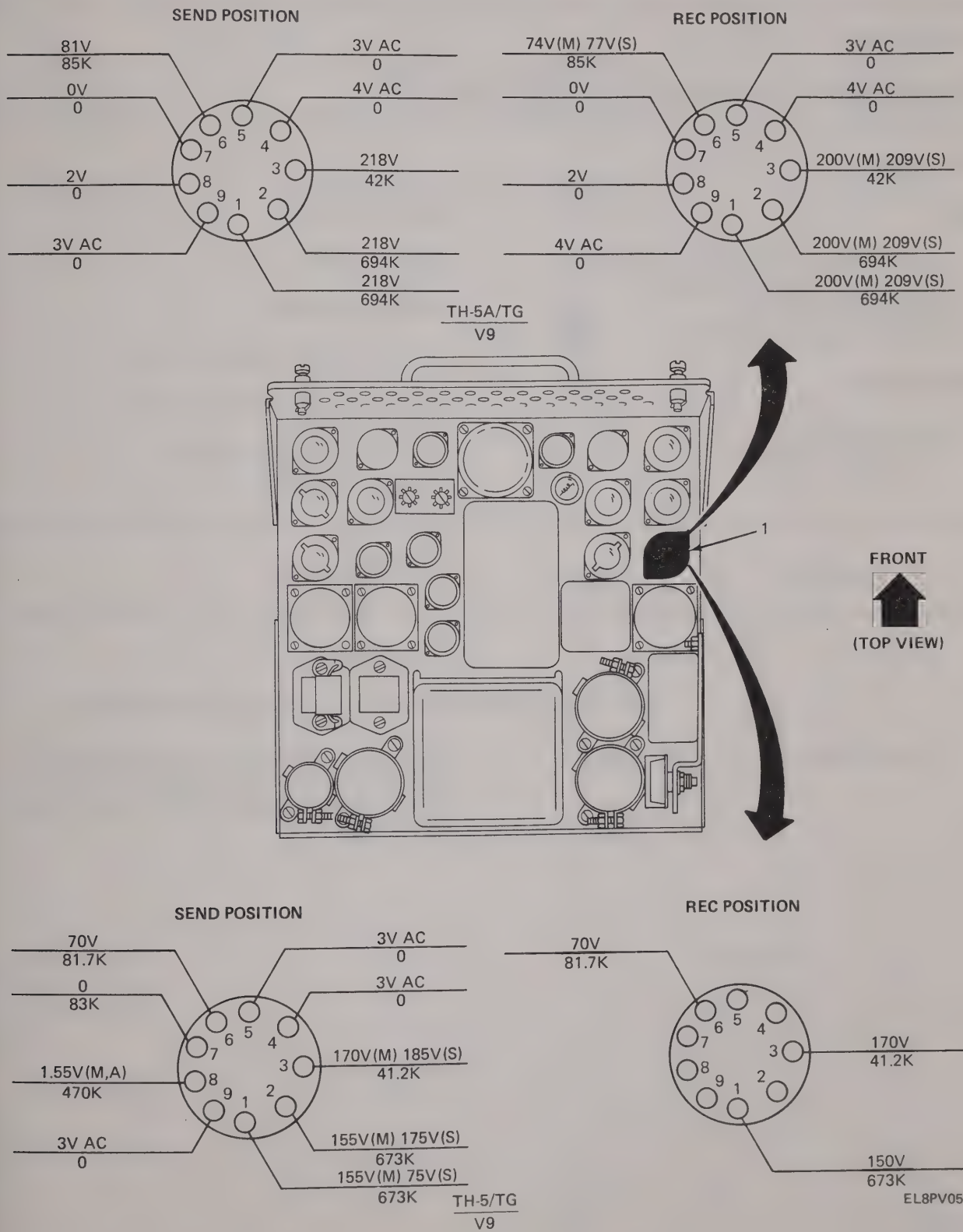
One technician

Equipment Condition

(A) NORM-REC-SEND switch in REC position
(M) Remove telephone plug for mark condition
(S) Insert telephone plug for space condition

LOCATION	ITEM	ACTION REMARKS
		CAUTION Disconnect power before making resistance measurements.
Tube socket V9	Tube V9 (1)	Using multimeter and tube socket adapter, test for resistance and voltage with NORM-REC-SEND switch set to REC or SEND. See paragraph 2-23.

2-32. VOLTAGE AND RESISTANCE MEASUREMENTS OF ELECTRON TUBE V9. (CONT)



2-33. VOLTAGE AND RESISTANCE MEASUREMENTS OF ELECTRON TUBE V10.

This task covers:

Voltage and resistance measurements of electron tubes V10

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment TK-100/G
Tube Socket-Adapter MX-1258/U
Multimeter AN/URM-105
Telephone Plug PJ-055B (2)

Materials/Parts

Electron tube V10
NSN 5960-00-166-7663

Personnel Required

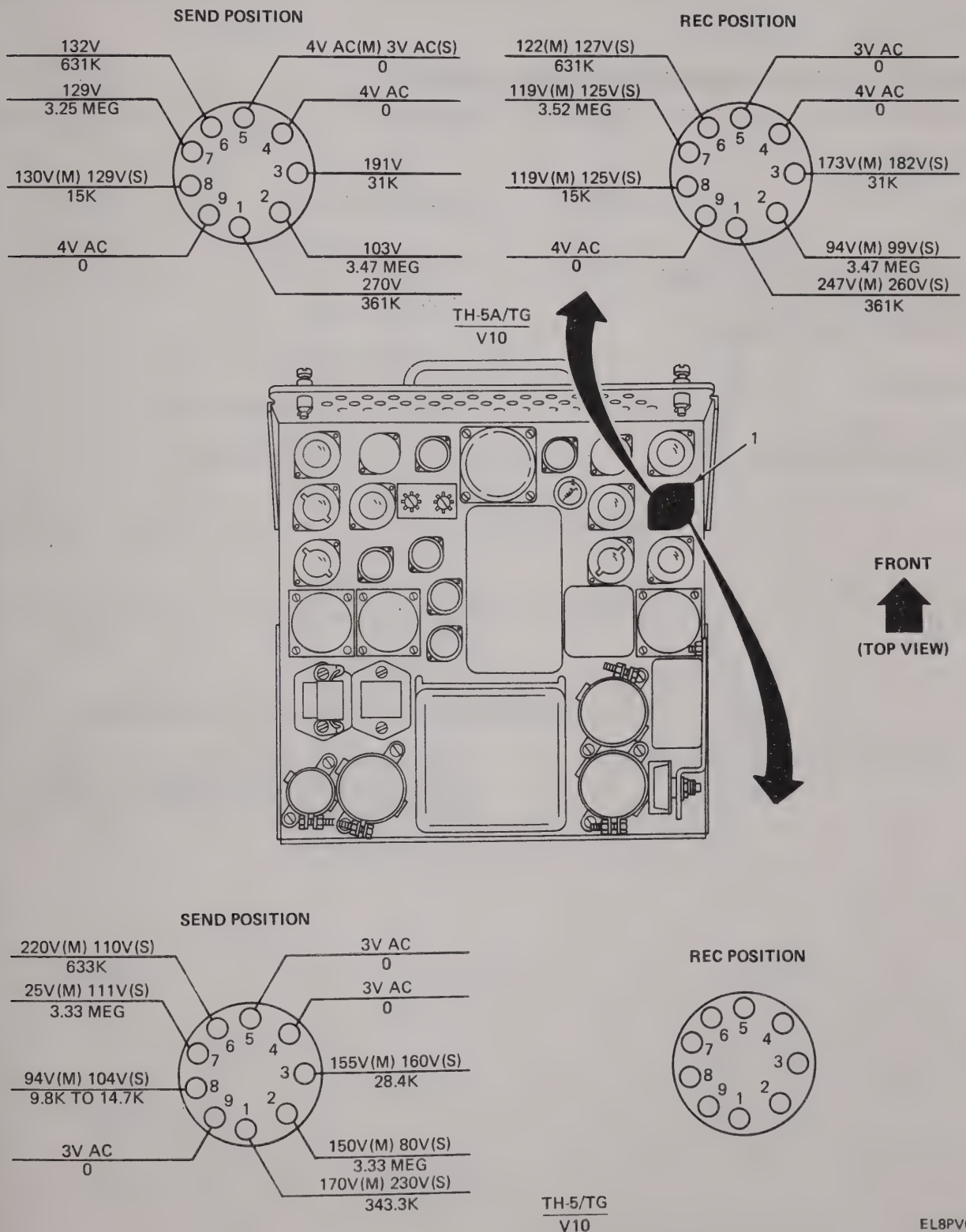
One technician

Equipment Condition

(A) NORM-REC-SEND switch in REC position
(M) Remove telephone plug for mark condition
(S) Insert telephone plug for space condition

LOCATION	ITEM	ACTION REMARKS
		CAUTION Disconnect power before making resistance measurements.
Tube socket V10	Tube V10 (1)	Using multimeter and tube socket adapter, test for resistance and voltage with NORM-REC-SEND switch set to REC or SEND. See paragraph 2-23.

2-33. VOLTAGE AND RESISTANCE MEASUREMENTS OF ELECTRON TUBE V10. (CONT)



2-34. VOLTAGE AND RESISTANCE MEASUREMENTS OF ELECTRON TUBE V11.

This task covers:

Voltage and resistance measurements of electron tube V11

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment TK-100/G
Tube Socket Adapter MX-1258/U
Multimeter AN/URM-105
Telephone Plug PJ-055B (2)

Materials/Parts

Electron tube V11
NSN 5960-00-166-7663

Personnel Required

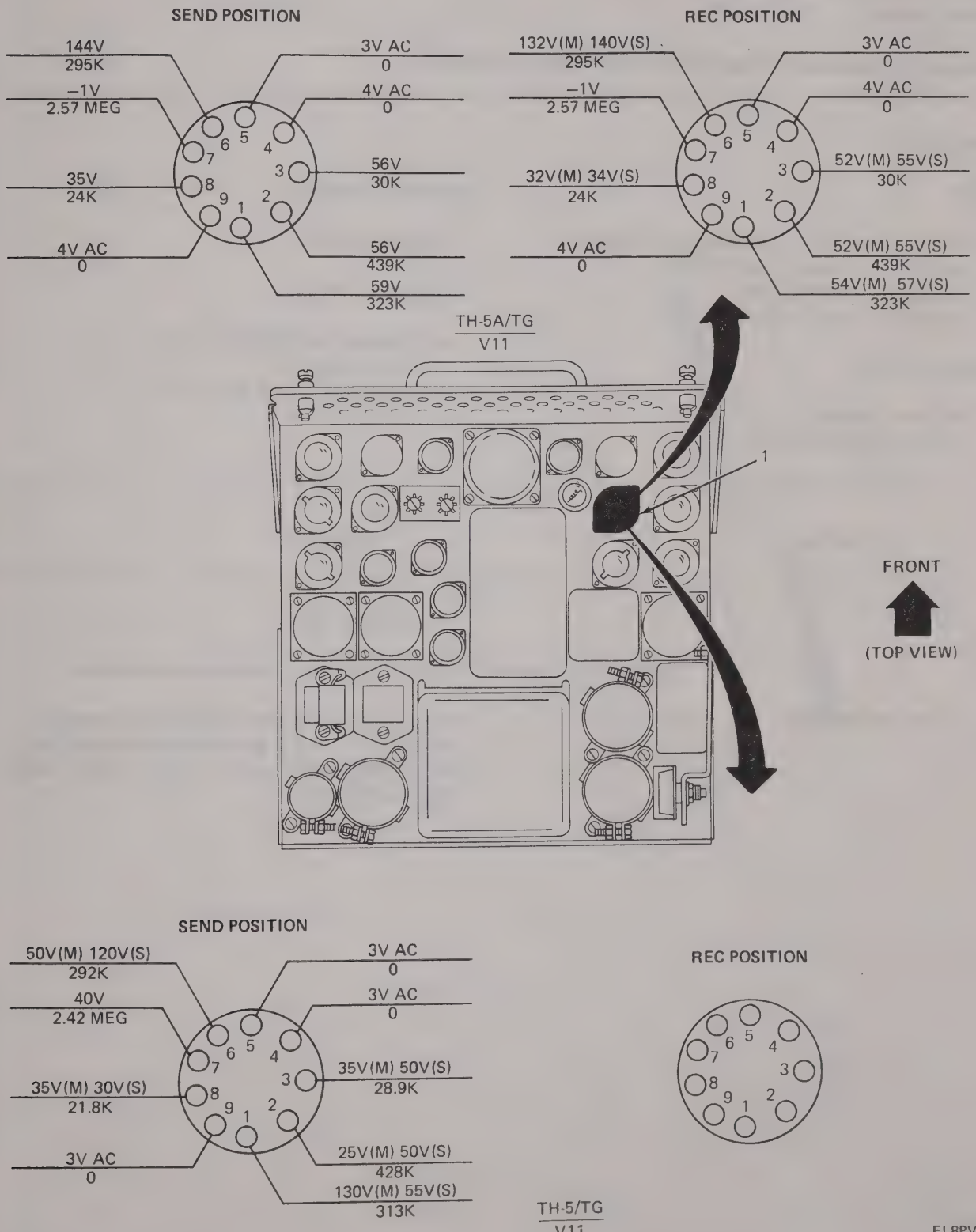
One technician

Equipment Condition

(M) Remove telephone plug for mark condition
(S) Insert telephone plug for space condition

LOCATION	ITEM	ACTION REMARKS
		CAUTION Disconnect power before making resistance measurements.
Tube socket V11	Tube V11 (1)	Using multimeter and tube socket adapter, test for resistance and voltage with NORM-REC-SEND switch set to REC or SEND. See paragraph 2-23.

2-34. VOLTAGE AND RESISTANCE MEASUREMENTS OF ELECTRON TUBE V11. (CONT)



2-35. VOLTAGE AND RESISTANCE MEASUREMENTS OF ELECTRON TUBE V12.

This task covers:

Voltage and resistance measurements of electron tube V12

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment TK-100/G
Tube Socket Adapter MX-1258/U
Multimeter AN/URM-105
Telephone Plug PJ-055B (2)

Materials/Parts

Electron tube V12
NSN 5960-00-166-7663

Personnel Required

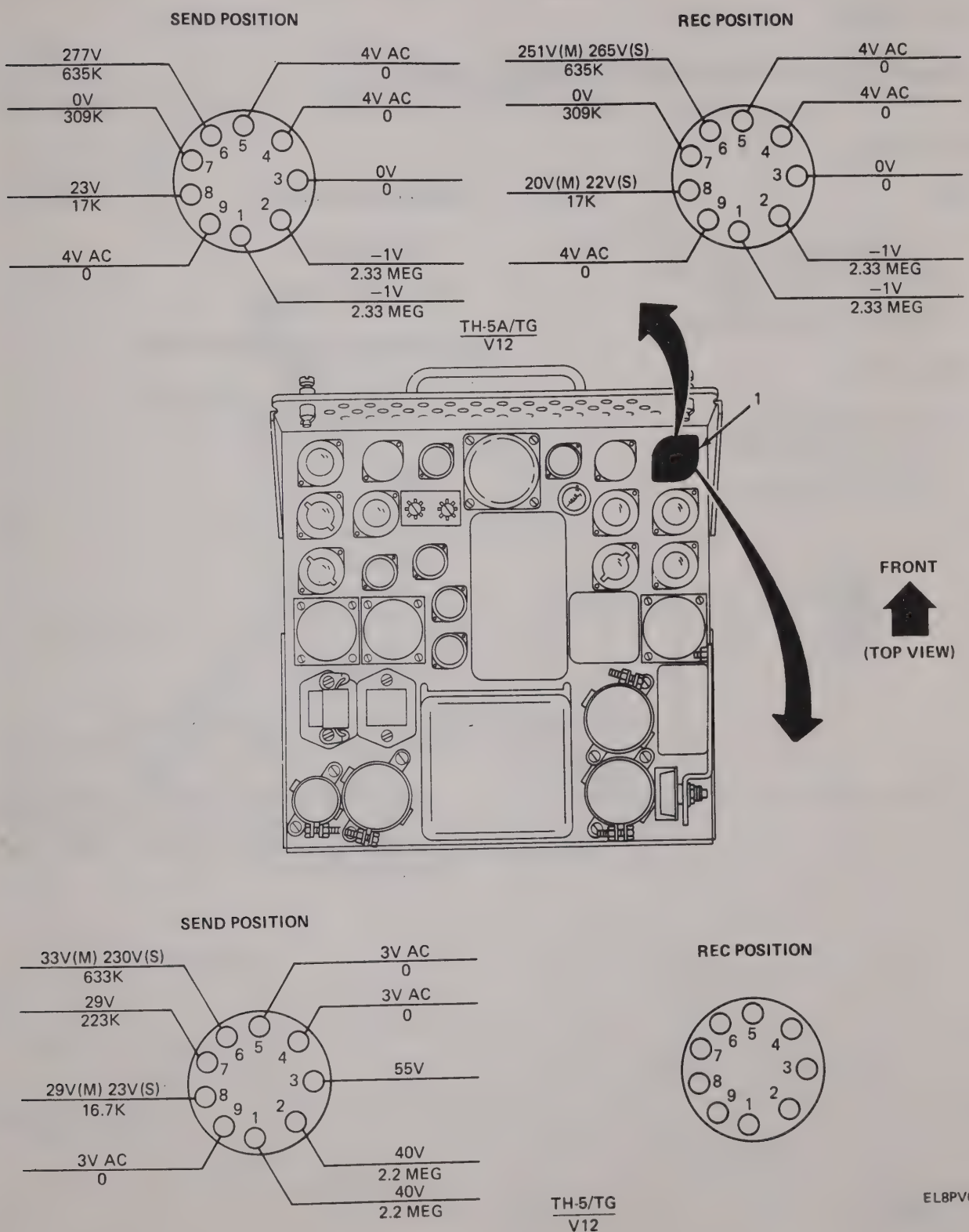
One technician

Equipment Condition

(M) Remove telephone plug for mark condition
(S) Insert telephone plug for space condition

LOCATION	ITEM	ACTION REMARKS
		CAUTION Disconnect power before making resistance measurements.
Tube socket V12	Tube V12 (1)	Using multimeter and tube socket adapter, test for resistance and voltage with NORM-REC-SEND switch set to REC or SEND. See paragraph 2-23.

2-35. VOLTAGE AND RESISTANCE MEASUREMENTS OF ELECTRON TUBE V12. (CONT)



2-36. VOLTAGE AND RESISTANCE MEASUREMENTS OF ELECTRON TUBE V13.

This task covers:

Voltage and resistance measurements of electron tube V13

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment TK-100/G
Tube Socket Adapter MX-1258/U
Multimeter AN/URM-105
Telephone Plug PJ-055B (2)

Materials/Parts

Electron tube V13
NSN 5960-00-166-7663
Semiconductor
NSN 5961-00-845-2331

Personnel Required

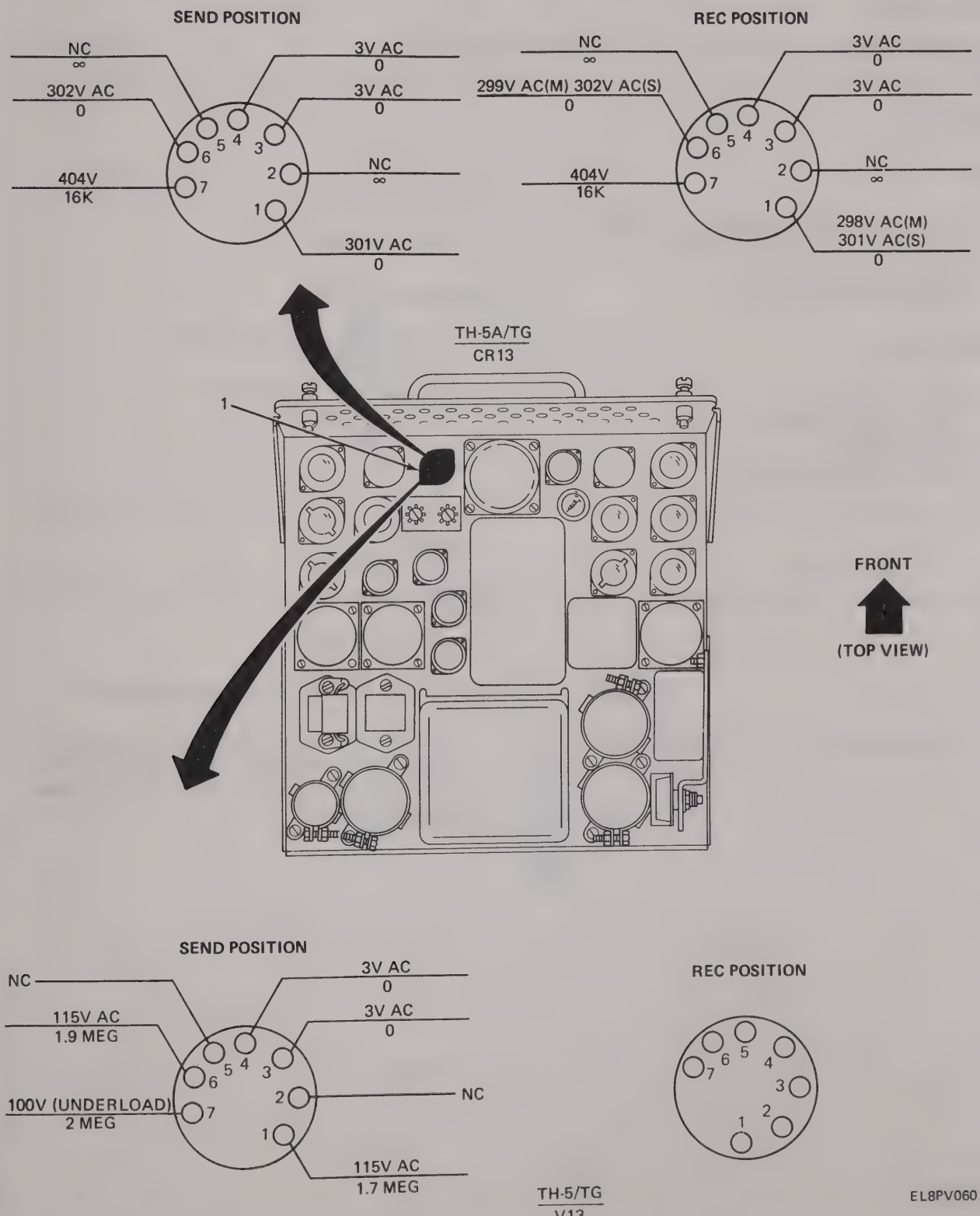
One technician

Equipment Condition

(M) Remove telephone plug for mark condition
(S) Insert telephone plug for space condition

LOCATION	ITEM	ACTION / REMARKS
		WARNING High voltage! Be careful when taking measurements. Disconnect power before making resistance measurements.
Tube socket V13	Tube V13 (1)	Using multimeter and tube socket adapter, test for resistance and voltage with NORM-REC-SEND switch set to REC or SEND. See paragraph 2-23.

2-36. VOLTAGE AND RESISTANCE MEASUREMENTS OF ELECTRON TUBE V13. (CONT)



2-37. VOLTAGE AND RESISTANCE MEASUREMENTS OF ELECTRON TUBE V14.

This task covers:

Voltage and resistance measurements of electron tube V14

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment TK-100/G
Tube Socket Adapter MX-1258/U
Multimeter AN/URM-105
Telephone Plug PJ-055B (2)

Materials/Parts

Electron tube V14
NSN 5960-00-166-7663
Semiconductor
NSN 5961-00-076-3545

Personnel Required

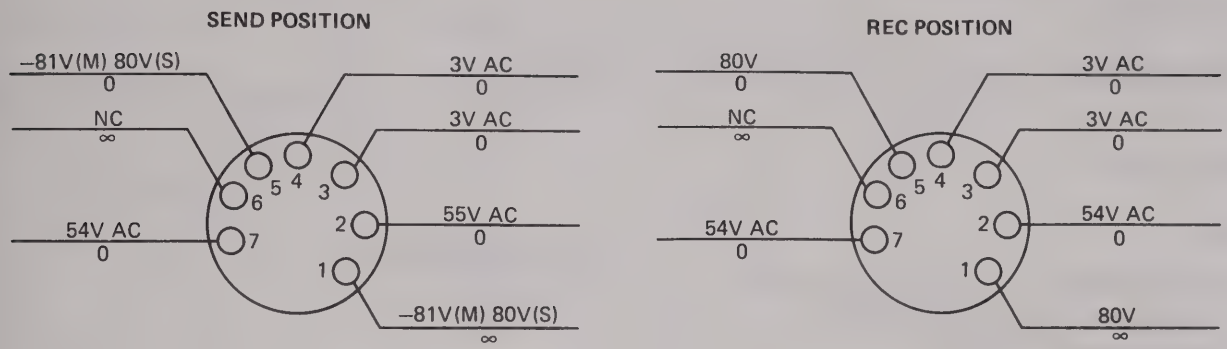
One technician

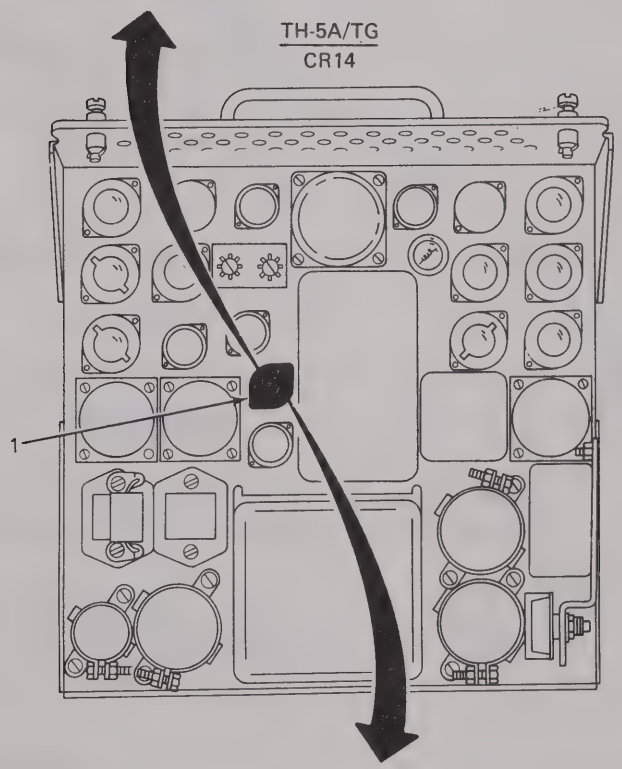
Equipment Condition

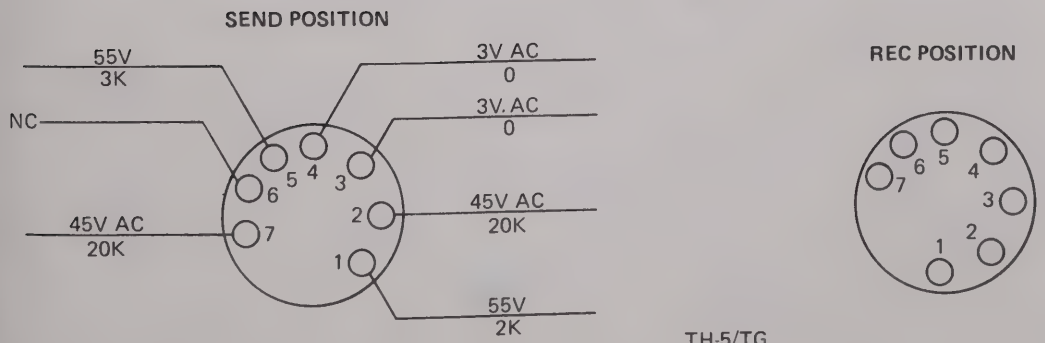
(M) Remove telephone plug for mark condition
(S) Insert telephone plug for space condition

LOCATION	ITEM	ACTION REMARKS
		CAUTION Disconnect power before making resistance measurements.
Tube socket V14	Tube V14 (1)	Using multimeter and tube socket adapter, test for resistance and voltage with NORM-REC-SEND switch set to REC or SEND. See paragraph 2-23.

2-37. VOLTAGE AND RESISTANCE MEASUREMENTS OF ELECTRON TUBE V14. (CONT)







TH-5/TG
V14

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2-38. VOLTAGE AND RESISTANCE MEASUREMENTS OF ELECTRON TUBE V15.

This task covers:

Voltage and resistance measurements of electron tube V15

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment TK-100/G
Tube Socket Adapter MX-1258/U
Multimeter AN/URM-105
Telephone Plug PJ-055B (2)

Materials/Parts

Electron tube V15
NSN 5960-00-166-7663
Semiconductor
NSN 5961-00-076-3545

Personnel Required

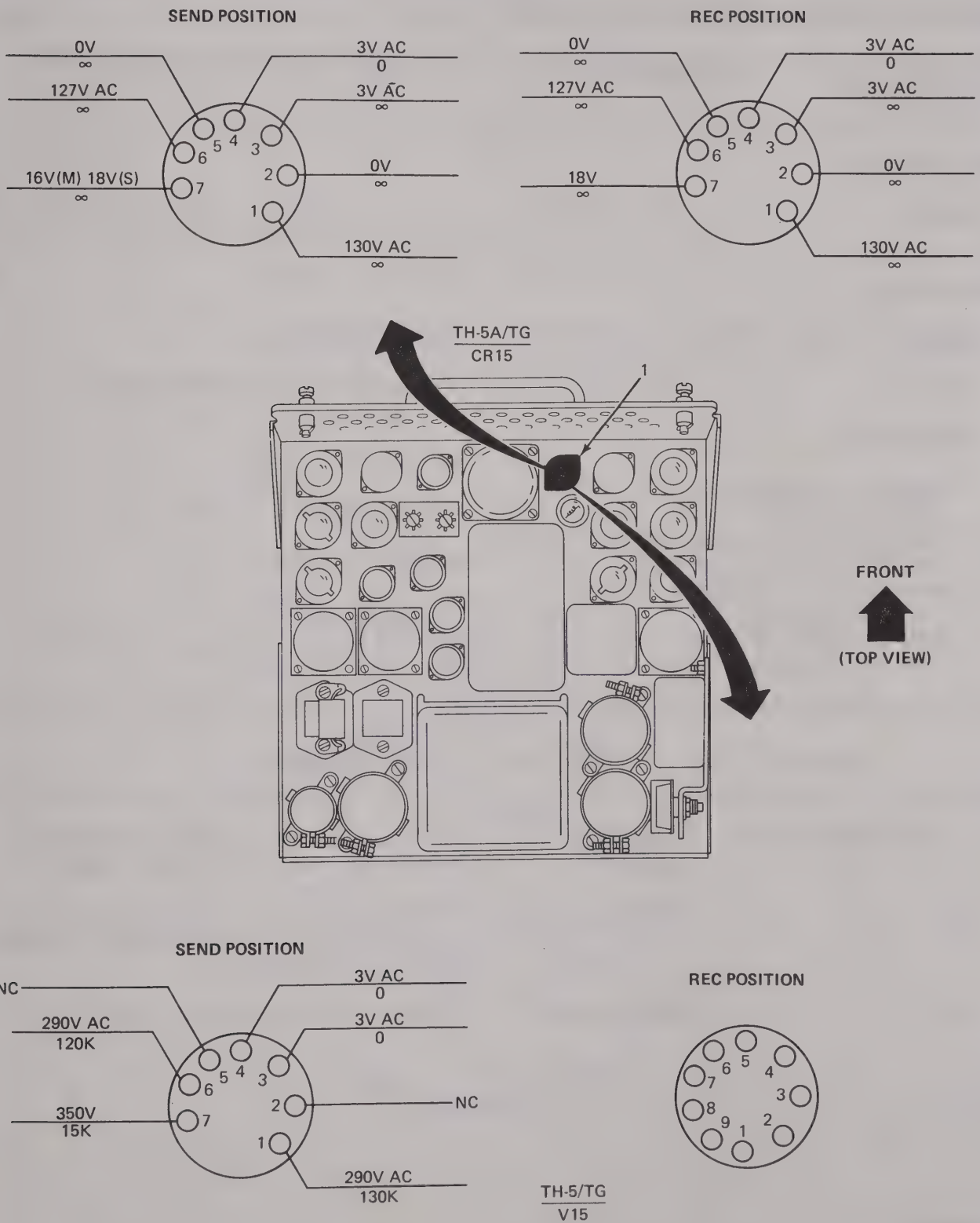
One technician

Equipment Condition

(M) Remove telephone plug for mark condition
(S) Insert telephone plug for space condition

LOCATION	ITEM	ACTION REMARKS
		WARNING High voltage! Be careful when taking measurements. Disconnect power before making resistance measurements.
Tube socket V15	Tube V15 (1)	Using multimeter and tube socket adapter, test for resistance and voltage with NORM-REC-SEND switch set to REC or SEND. See paragraph 2-23.

2-38. VOLTAGE AND RESISTANCE MEASUREMENTS OF ELECTRON TUBE V15. (CONT)



EL8PV062

Section VI PREPARATION FOR STORAGE OR SHIPMENT

2-39. PREPARATION FOR STORAGE OR SHIPMENT.

The exact procedure for repacking depends on the conditions under which the equipment is to be shipped or stored.

This task covers:

Packing

INITIAL SETUP

Tools

None

Materials/Parts

Waterproof wrapping paper
(10 sq ft approx)
Corrugated single face fiberboard
(8 sq ft approx)
Pressure-sensitive waterproof tape
3 in. (15 ft approx)
Gummed paper tape
3 in. (15 ft approx)

Materials/Parts (Cont)

Filler material paper or fiberboard
(as required)

Personnel Required

One technician

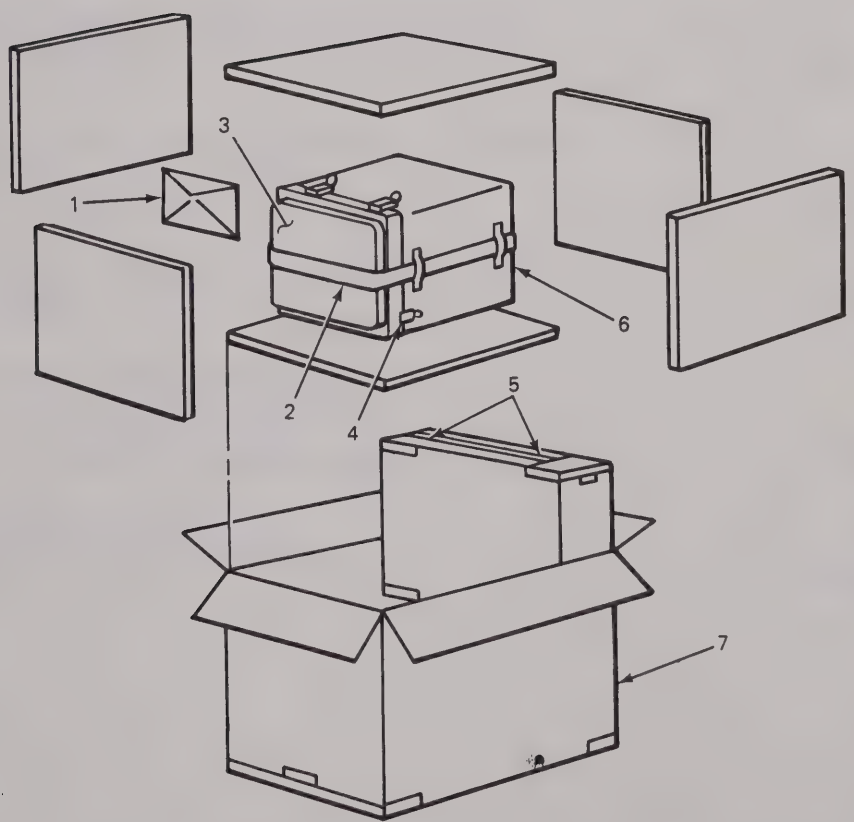
Equipment Condition

Equipment off

LOCATION	ITEM	ACTION **REMARKS**
1. Telegraph terminal	Technical manual (1)	Put manual in a bag made of waterproof paper. Seal seams with pressure tape.
2.	Running spares (2)	Stow spare fuses in cover assembly. Wrap tubes and lamps between layers of cardboard. Seal with gummed tape.
3.	Power cord (3)	Wind and stow against front panel.

2-42. PREPARATION FOR MOVEMENT OR STORAGE. (CONT)

LOCATION	ITEM	ACTION **REMARKS**
PACKING (CONT)		
4. Telegraph terminal	Spring fastener (4)	Close and latch.
5.	Running spares (5)	Place in box.
6.	Telegraph terminal (6) and box (7)	Wrap unit in corrugated fiberboard, secure with tape. Wrap box in bag made of waterproof wrapping paper.



EL8PV063

APPENDIX A

REFERENCES

A-1. SCOPE

This appendix lists all forms, field manuals, technical manuals, and miscellaneous publications referenced in this manual.

A-2. TECHNICAL MANUALS

Painting Instructions for Field Use	TM 43-0139
Army Equipment Record Procedures (TAMMS)	TM 38-750
Operator's and Organizational Maintenance Manual, Test Sets, Electron Tube TV-7/U, TV-7A/U, TV-7B/U and TV-7D/U	TM 11-6625-247-12
Operator's Manual Telegraph Terminal TH-5/TG	TM 11-5805-246-10
Operator's and Organizational Maintenance Repair Parts and Special Tools List and Maintenance Allocation Chart for Telegraph Terminal TH-5/TG	TM 11-5805-246-12P
Operator's and Organizational Maintenance Manual: Multimeter AN/URM-105 and AN/URM-105C, (Including Multimeter ME-7U/U and ME-77C/U)	TM 11-6625-203-12
Remote Control Equipment TRC-289 and Receiver Transmitter Control Group AN/GRW2	TM 11-2667
Operator's, Organizational, Direct Support, General Support and Depot Maintenance Manual (Including Repair Parts and Special Tools List): Panel Patching Communications SB-611/MRC	TM 11-5805-204-15
Procedures for Destruction of Electronics Materiel to Prevent Enemy Use (Electronics Command)	TM 750-244-2

A-3. MISCELLANEOUS PUBLICATIONS

Consolidated Index of Army Publications and Blank Forms	DA Pam 310-1
Military Publications: Index of Supply Manuals; Signal Corps	DA Pam 310-21
Index of Army Motion Pictures, Filmstrips, Slides and Phono Recordings	DA Pam 108-1
Preservation, Packaging, and Packing Materials Supplies, and Equipment used by the Army	SB 38-100

APPENDIX B

MAINTENANCE ALLOCATION CHART

Section I INTRODUCTION

B-1. GENERAL.

This appendix provides a summary of the maintenance operations for the Telegraph Terminal TH-5/T6 and TH-5A/T6. It authorizes categories of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

B-2. MAINTENANCE FUNCTION.

Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination.

b. Test. To verify serviceability and to detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition, i.e., to clean (decontaminate), to preserve, to drain, to paint, or to replenish fuel, lubricants, hydraulic fluids, or compressed air supplies.

d. Adjust. To maintain, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to the specified parameters.

e. Aline. To adjust specified variable elements of an item to bring about optimum or desired performance.

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipment used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. Install. The act of emplacing, seating, or fixing into position an item, part, module (component or assembly) in a manner to allow the proper functioning of the equipment system.

h. Replace. The act of substituting a serviceable, like type part, subassembly, or module (component or assembly) for an unserviceable counterpart.

i. Repair. The application of maintenance services (inspect, test, service, adjust, aline, calibrate, replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, remachining, or resurfacing) to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

B-2. MAINTENANCE FUNCTION. (CONT)

j. Overhaul. That maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (i.e., DMWR) in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

k. Rebulid. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenace applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours, miles, etc.) considered in classifying Army equipments/components.

B-3 COLUMN ENTRIES, SECTION II.

a. Column 1, Group Number. Column 1 lists group numbers, the purpose of which is to identify components, assemblies, subassemblies, and modules with the next higher assembly.

b. Column 2, Component/Assembly. Column 2 contains the noun names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Column 3, Maintenance Functions. Column 3 lists the functions to be performed on the item listed in column 2. When items are listed without maintenance functions, it is solely for the purpose of having the group numbers in the MAC and RPSTL coincide.

d. Column 4, Maintenance Category. Column 4 specifies, by the listing of a work time figure in the appropriate subcolumn(s), the lowest level of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number of complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate work time figures will be shown for each category. The number of task-hours specified by the work time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item or system) to a serviceable condition under typical field operating conditions. This time includes preparation time, troubleshooting time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. Subcolumns of column 4 are as follows:

C - Operator/Crew

O - Organizational

F - Direct Support

H - General Support

D - Depot

e. Column 5, Tools and Equipment. Column 5 specifies by code, those common tool sets (not individual tools) and special tools, test, and support equipment required to perform the designated function.

f. Column 6, Remarks. Column 6 contains an alphabetic code which leads to the remark in section IV.

B-4. TOOL AND TEST EQUIPMENT REQUIREMENTS (SECTION III).

a. Tool or Test Equipment Reference Code. The numbers in this column coincide with the numbers used in the tools and equipment column of the MAC. The numbers indicate the applicable tool or test equipment for the maintenance functions.

b. Maintenance Category. The codes in this column indicate the maintenance category allocated to the tool or test equipment.

c. Nomenclature. This column lists the noun name and nomenclature of the tools and test equipment required to perform the maintenance functions.

d. National/NATO Stock Number. This column lists the National/NATO stock number of the specific tool or test equipment.

e. Tool Number. This column lists the manufacturer's part number of the tool followed by the Federal Supply Code (5-digit) in parentheses for manufacturers.

B-5. REMARKS (SECTION IV).

a. Reference Code. This code refers to the appropriate item in section II, column 6.

b. Remarks. This column provides the required explanatory information necessary to clarify items appearing in section II.

Section II MAINTENANCE ALLOCATION CHART FOR TELEGRAPH, TERMINAL TH-5/TG AND-5A/TG

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT	(6) REMARKS
			C	O	F	H	D		
00	TH-5/TG	Inspect	0.3	0.6				1	A
	AND	Test	0.3		2.0			1 thru 7	A thru H
	TH-5A/TG	Service	0.5	1.5				1, 2, 3	A, B
		Repair	0.2		2.0			1 thru 7	
		Overhaul					24.0	1 thru 16	A thru H
		Rebuild				24.0		1 thru 16	A thru H
01	FRONT	Inspect	0.3	0.3				1	A
	PANEL AND	Test	0.3	0.3				1, 2, 3	C
	CHASSIS	Service	0.3	0.6				1, 2, 3	G
		Repair		0.2	2.0			1, 3, 16	A thru C
		Overhaul							
		Rebuild							
0101	CONTROLS	Inspect	0.3	0.3				1	A
	AND	Test	0.3	0.3				1, 2, 3	A, C
	INDICATORS	Service		0.3	0.6			1, 16	G
		Repair		0.3	0.6			1, 16	A, C, G
		Overhaul							
		Rebuild							
0102	TERMINAL	Inspect			0.3			1, 2	A
	BOARD A	Test		1.5			3.5	1 thru 16	D
		Service				3.0	3.0	1, 2, 16	A thru H
		Repair					3.5	1, 2, 16	A thru H
		Overhaul							
		Rebuild							
0103	TERMINAL	Inspect			0.3			1, 2	A
	BOARD B	Test		1.5			3.5	1 thru 16	D
		Service				3.0	3.0	1, 2, 16	A thru H
		Repair					3.5	1, 2, 16	A thru H
		Overhaul							
		Rebuild							

Section III TOOL AND TEST EQUIPMENT REQUIREMENTS FOR TELEGRAPH TERMINAL TH-5/TG AND TH-5A/TG

TOOLS OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	O,F,H	Tool Kit, Electronic Equipment TK-100/G	5180-00-605-0079	
2	O,F,H,D	Multimeter AN/URM-105		
3	O,F,H	Test Set, Electron Tube TV-7/U		
4	F,H	Frequency Meter AN/TSM-16		
5	F,H	Decibel Meter ME-22/PCM		
6	F,H	Teletypewriter TT-4A/TG		
7	F,H	Plug, Telephone PJ-055B		
8	H	Impedance Bridge TS-460/U		
9	H	Test Set I-193-A		
10	H	Rectifier RA-43-B		
11	H	Distortion Test Set TS-383/GG		
12	H	Teletypewriter TG-7-A	5815-00-198-9029	
13	H	Telephone Set TA-312/PT	5805-00-543-0012	
14	H	Light Assembly Electric MX-1292/ PAQ	6695-00-537-4470	
15	H	Attenuator T-402/U	5905-00-230-5149	

Section III TOOL AND TEST EQUIPMENT REQUIREMENTS FOR TELEGRAPH TERMINAL TH-5/TG AND TH-5A/TG. (CONT)

TOOLS OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
16	O,F,H,D	Tube Socket Adapter MX-1258/U		

Section IV REMARKS

REFERENCE CODE	REMARKS
A	Exterior of TH-5/TG and TH-5A/TG.
B	Cables and connectors.
C	Operational testing.
D	All tests.
E	Preventive maintenance only.
F	All servicing.
G	By replacement of knobs and fuses.
H	All repairs.

APPENDIX C

COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LIST

Section I INTRODUCTION

C-1. SCOPE.

This appendix lists components of end item and basic issue items for the Telegraph Terminal TH-5/T6 and TH-5A/T6 to help you inventory items required for safe and efficient operation.

C-2. GENERAL.

The components of End Item and Basic Issue Items lists are divided into the following sections:

a. Section II. Components of End item. This listing is for informational purposes only, and is not authority to requisition replacements. These items are part of the end item, but are removed and separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts.

a. Section III. Basic Issue Items. These are the minimum essential items required to place the telegraph terminal in operation and to perform emergency repairs. Although packed and shipped separately, Basic Issue Items must be with the Telegraph Terminal TH-5/T6 and TH-5A/T6 during operation and whenever it is transferred between property accounts. This manual is your authority to request/requisition replacement Basic Issue Items, based on TOE/MTOE authorization of the end item.

C-3. EXPLANATION OF COLUMNS.

The following provides an explanation of columns found in the tabular listings:

a. Column 1, Illus. No. (Illustration Number). This column does not apply.

b. Column 2, National Stock Number. Indicates the National stock number assigned to the item and will be used for requisitioning purposes.

c. Column 3, Description. Indicates the Federal item name and if required, a minimum description to identify and locate the item. The last line for each item indicates the FSCM (in parentheses) followed by the part number. If an item needed differs on different models of equipment, the model is shown under the 'Usable On' heading in this column.

d. Column 4, U/M (Unit of Measure). Indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (ea, in, pr).

e. Column 5, Qty Req'd (Quantity Required). Indicates the quantity of the item authorized to be used with/on the equipment.

APPENDIX C

Section II EXPENDABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION, FSCM	(5) U/M
1	C	6850-00-105-3084	Trichlorotrifluoroethane (80244)	OT
2	C	8305-00-267-3015	Cleaning cloth	YD
3	C	8020-00-205-6512	Sash brush (96906)	EA
4	O	5350-00-598-5908	Sandpaper. No. 000	SH
5	O	5350-00-221-0872	Cloth, abrasive	SH

GLOSSARY

ALTERNATING CURRENT. Electric current (waves) that continually change in amplitude and reverses polarity.

AMPERE. Basic unit of electrical current flow.

CARRIER. A wave of constant amplitude frequency and phase which can be modulated by changing amplitude, frequency, or phase.

CONTINUOUS WAVE. Electric current (waves) of a constant amplitude and frequency.

CURRENT. Flow of charge or rate of such flow.

DIRECT CURRENT (DC). Electric current (waves) that flows in only one direction and remains essentially constant in magnitude.

DUPLEX. Transmission and reception over teletypewriter lines are possible at the same time.

FUSE. A device to open a circuit when excess current exists in a circuit.

NEUTRAL. In a normal condition: neither positive (+) nor negative (-).

OSCILLATOR. Generates repetitive waveforms at a fixed or varying frequency.

POWER SUPPLY CIRCUIT. Provides dc voltage to operate tubes. Power transformer T6 changes 115 vac line voltage to higher ac voltage to be rectified to dc. Also provides low voltage of 12.6 and 6.3 vac for tube filaments.

PULSE. A quick change in voltage, either positive or negative which conveys information to a circuit.

RECEIVE. To receive a signal or message.

RECEPTACLE. An outlet to which the male end of a power cord is inserted.

RECTIFIER CIRCUIT. Change ac voltage to dc.

TRANSMIT. To send a signal or message.

THRESHOLD CIRCUIT. A circuit which cuts off a received telegraph signal if its level is below -50 dbm.

VOLTAGE. Electromotive force, or pressure which causes current to flow through an electrical conductor.

VOLTAGE DOUBLER. Multiplies voltage amplitude by two.

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3-10	3-3		3-1
5-6	5-8		
		F03	

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

Recommend that the installation antenna alignment procedure be changed throughout to specify a 2° IFF antenna lag rather than 1°.

REASON: Experience has shown that with only a 1° lag, the antenna servo system is too sensitive to wind gusting in excess of 25 knots, and has a tendency to rapidly accelerate and decelerate as it hunts, causing strain to the drive train. Hunting is minimized by adjusting the lag to 2° without degradation of operation.

Item 5, Function column. Change "2 db" to "3db."

REASON: The adjustment procedure the the TRANS POWER FAULT indicator calls for a 3 db (500 watts) adjustment to light the TRANS POWER FAULT indicator.

Add new step f.1 to read, "Replace cover plate removed in step e.1, above."

REASON: To replace the cover plate.

Zone C 3. On J1-2, change "+24 VDC to "+5 VDC."

REASON: This is the output line of the 5 VDC power supply. +24 VDC is the input voltage.

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER
SSG I. M. DeSpiritof 999-1776

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